S. HRG. 104–867

INTELLIGENCE ASSESSMENTS OF THE EXPOSURE OF U.S. MILITARY PERSONNEL TO CHEMICAL AGENTS DURING OPERATION DESERT STORM

HEARING

BEFORE THE

SELECT COMMITTEE ON INTELLIGENCE UNITED STATES SENATE

AND THE

COMMITTEE ON VETERANS' AFFAIRS UNITED STATES SENATE

ONE HUNDRED FOURTH CONGRESS

SECOND SESSION

WEDNESDAY, SEPTEMBER 25, 1996

Printed for the use of the Select Committee on Intelligence of the United States Senate and the Committee on Veterans' Affairs

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CONTENTS

INTELLIGENCE ASSESSMENTS OF THE EXPOSURE OF U.S. MILITARY PERSONNEL TO CHEMICAL AGENTS DURING OPERATION DESERT STORM

WEDNESDAY, SEPTEMBER 25, 1996

U.S. SENATE,
SELECT COMMITTEE ON INTELLIGENCE AND THE
COMMITTEE ON VETERANS' AFFAIRS,
Washington, DC.

The Committees met jointly, pursuant to notice, at 10:35 a.m., in Room SH–216, Hart Senate Office Building, the Honorable Arlen Specter, Chairman of the Select Committee on Intelligence, presiding.

Present from the Intelligence Committee: Senators Specter, Shelby, Hutchison, Kerrey of Nebraska, Bryan, Kerry of Massachusetts and Robb.

Present from the Veterans' Affairs Committee: Senators Simpson, Thurmond, Jeffords, Craig, Rockefeller and Wellstone.

Also Present from the Intelligence Committee: Charles Battaglia, Staff Director; Chris Straub, Minority Staff Director; Suzanne Spaulding, Chief Counsel; and Kathleen McGhee, Chief Clerk.

Also Present from the Veterans' Affairs Committee: Tom Harvey, Staff Director and Chief Counsel; Jim Gottlieb, Minority Staff Director and Minority Chief Counsel; and Stephanie Sword, Sally Satel, Dat Tran, Linda Reamy, Dennis Doherty, Elinor Tucker, Joanne Gavalec, Bill Tuerk and Bill Foster, Staff Members.

SSCI Chairman SPECTER. This joint hearing of the Senate Intelligence Committee and the Veterans' Affairs Committee will now commence. Senator Simpson, Chairman of Veterans' Affairs, will be joining us momentarily, as will be Senator Kerrey, Vice Chairman of the Intelligence Committee. But we've been asked to proceed.

This hearing is designed to explore what the United States Intelligence Community knows about exposure and injuries to U.S. service members from Iraqi chemical supplies. We have known for a long time that Iraq, Saddam Hussein, have very extensive supplies of chemical weapons. We know that they have been used in the Iran-Iraq war, that they have been used against the Kurds. And we suspect that they may have been used against U.S. personnel in the Gulf War as well.

When the supplies were destroyed with U.S. bombing, there may well have been injuries to U.S. personnel where we were not anticipating that there would be the destruction of those chemical supplies.

In conversations with top officials from the Department of Defense, we have been advised that there were many U.S. personnel, perhaps running into the thousands, engineers, who may have been exposed to chemical weapons at a time when those weapons were being destroyed.

There may well be a violation of international law by the Iraqis, by Saddam Hussein there, and it may well be that reparations and damages can be collected from Iraq. Iraq is rich in oil. They have not been able to sell very much of it lately because of U.N. sanctions, but it may well be that we can look to Iraq to compensate U.S. personnel on injuries if that is proved to be the case.

Whatever Iraqi responsibility there may be, there is always the responsibility of the United States government. And we will hear from Senator Simpson, who has very strong sentiments about that subject. He and I have been on this subject since 1981 when he was Chairman of the Veterans' Affairs Committee, as he is today. This is a subject where I feel very strong, going back to the tales that my father told me from his experience in World War I. And we have American soldiers on the front line, exposed to chemical weapons, where injuries are sustained, and the bottom line is a United States responsibility.

There is a great deal more that could be said, but we have quite a number of Senators here and quite a number of witnesses. So, I will yield at this point to my distinguished colleague, the Chairman of the Veterans' Affairs Committee, Senator Simpson.

Veterans' Chairman SIMPSON. That you, Arlen. Thank you very much.

I'm pleased to be present for this hearing to address these recent reports that U.S. military personnel may have been exposed to low levels of chemical nerve agent in March, 1991 during the post-Persian Gulf War bunker destructions in Iraq. I'm always eager to work with my friend, Arlen Specter, the Ranking Member of the Veterans' Affairs Committee, Senator Rockefeller, Senator Shelby and certainly others.

All of us have a great interest in veterans and the care of veterans. Otherwise, we would not be spending $40 billion a year in that course. That is what we spend for veterans each year for their health care, disability, compensation, children and spouses. It is a very large part of the Health and Human Services budget as well as the Veterans' budget.

We obviously need to know more about the bunker in southern Iraq. I've read the August 2, 1996 CIA report on the matter as well as statements that have been issued by the DOD. Questions still remain. We need more information and it is our intent to try to gather some of it today in the most productive way possible.

This is not, in any way, an attempt today to round up "the accused." It is a good faith effort to ground ourselves in the facts so that we might be able to perform our jobs in a thoughtful manner.

As is often the case in dealing with any issue regarding injured and ill veterans, many people want to simply sweep aside sound medical and scientific evidence on an emotional basis and go ahead and spend the money. And I have no problem with that if we have the money. If we don't have the money, we've got to figure in the Veterans' Affairs budget where to get it. When we add an entitle-

ment, where do we get the money? Unfortunately, that sometimes doesn't puzzle anyone, we just do it.

It is my hope that by hearing's end, we will have a better understanding, for example, of why the U.N. report was transmitted to the DOD in November 1991 and why it was not given more consideration. Was it because of the ugly fog of war? Those are things we would like to find out. Why did chemical detectors not go off when the bunker was destroyed by the U.S. forces? What was learned from the experience? If errors were made, what can be done to ensure it does not happen again? These are but a few of the questions swirling about. We welcome the expert testimony of the VA, the DOD and CIA. It will be helpful to hear from these fine and experienced witnesses.

I am well aware of the veterans who believe that it is indeed the low level nerve agent exposure from the bunker destruction that made them ill. Many of them contact me. They speak from their hearts. I hear them. Nobody wants veterans who served the nation with pride and distinction to be suffering—nobody. It is not the issue here today to see whether we leave people to suffer.

Nobody doubts that many of them are ill. But we do yet know exactly what is making them sick. Researchers have not been able to conclude that the symptoms are the result of any one unique illness. That is why a great research outreach treatment and compensation effort was set in motion during the 103rd Congress. We are continuing with this aggressive response under my watch as Chairman of the Senate Veterans' Affairs Committee, and the effort will obviously continue long after I retire from the Senate.

I do want Americans to know of the Federal Government's vast involvement with our Persian Gulf veterans. We are not uncaring, or unresponsive. Indeed, the VA will speak to that in a few minutes, but I do want to enter into the record two documents that list all that the Congress is doing for the sick Persian Gulf veterans. It is a remarkable compilation. We are a great nation. We have allocated great resources for those who serve in our country's armed services. The VA has over thirty—thirty—research projects underway. It has three environmental hazards research centers and it has announced the creation of a fourth center.

The VA has also undertaken a gargantuan epidemiologic survey and study. It will compare a representative sampling of 15,000 deployed Persian Gulf veterans with a control group of 15,000 veterans who served state-side or in other locations away from Southwest Asia during the Persian Gulf war. Those results are due in 1998.

Congress has also passed legislation requiring that sick Persian Gulf veterans be compensated by the VA—even if there is no diagnosis of disease. That needs to be known to the American people as we get into these issues of emotion. There are 13 categories of undiagnosed illnesses for which a Persian Gulf veteran can be compensated. Congress has also mandated that Persian Gulf veterans receive priority treatment at VA hospitals.

So, that is a brief compilation of the many, many ongoing Federal activities for the Persian Gulf veterans.

The other agencies included in the multi-agency research effort are the Department of Defense; the National Institute of Health;

the Centers for Disease Controls, the National Academy of Science, the Environmental Protection Agency and more.

I will simply say that this Congress and the 103rd Congress have accomplished a great deal for the nation's Persian War veterans. Coordinated efforts are underway to treat them, to compensate them, and to better understand their ailments. They have been uppermost in my mind and in our minds.

Some of those who are otherwise playing to emotion, fear and guilt are doing so regardless of fact. Everyone is entitled to their own opinion, but, no one is entitled to their own facts.

Thank you.

SSCI Chairman SPECTER. Thank you very much Senator Simpson.

Senator Rockefeller, Vice Chairman, the Ranking Member of the Veteran's Affairs Committee.

Veterans' Ranking Member ROCKEFELLER. Thank you, Mr. Chairman, very much. And I'm very happy about this joint hearing of our Committees today.

During the last Congress, the priority of the Veterans' Affairs Committee was, in fact, oversight of the VA and the DOD response to the Persian Gulf War mystery illnesses. We conducted four major hearings, crafted legislation to deal with various unmet needs, and put out, I think, an excellent staff report.

So, I'm extremely grateful that you've taken the initiative in calling us to do this. Now, I have some very strong things that I want to say, and they're made out of neither emotion, guilt, or anything else, but out of the sense of the constitutional oath that I took when I was sworn into the United States Senate.

The Chairman amply explained the reasons for today's hearings. And I will not review again the unfortunate disclosures of chemical agent exposures that bring us here. Suffice it to say that with each passing week, we hear new revelations of toxic dangers that our soldiers faced every day in the Persian Gulf. Dangers which almost everyone but the Department of Defense knew or at the very least, assumed, were ever present. But the official response is not a pretty one, I'm afraid, and I wish to talk about that.

First, there was the giving of an unapproved drug to our soldiers, a drug that was meant to be used against a nerve agent that had never been detected in the Gulf—a drug which DOD's own researchers admit could never have worked against the gas we most feared would be used, which was sarin.

Then there were the constant chemical alarms that sounded in the Gulf, heard by our soldiers, but the official response was, "False alarms, no problem." When other countries or the United Nations reported detection of chemical-agent releases, the official U.S. response was always, "No independent confirmation, no problem." When our soldiers—all of whom were healthy when they left for the Gulf, virtually by definition—starting coming home ill and asking for help, the official response was more often than not, "It's all in your head. No problem." And when there were reports of mothers and babies with problems as well, the official response was more often than not, "Not related to the Gulf. No problem."

And now when evidence suggests low-level chemical exposures afflicted our men and women in the Gulf, the official response is,

therefore, not surprising. And that is, "There's no proof of long-term health affects from low-level exposures. Therefore, no problem."

Well, the "no problem" attitude is, in this Senator's judgment, the problem. And it's time to face the music. Way past time. It's time for a change at DOD.

Sure, the government is doing a lot to find answers and to help our veterans. But, I'd have to say that much of that has been forced on the Department of Defense by the Congress through legislation and otherwise. And I'm convinced that the attitude of "no problem and we're going to prove it" is what pervades DOD thinking and management of this public health mystery. This thinking has survived too long at the peril of too many people, and it is undermining the credibility and the ability of DOD to do its critical health care work.

DOD's clinical evaluation program, CCEP, is a sad example. That's the primary DOD program established to measure the extent of health problems following the war. The CCEP found large percentages of our soldiers with numerous health complaints, many of them serious health complaints. They included 47 percent with complaints of fatigue, 49 percent with complaints of joint pains, 39 percent with complaints of headaches. And the list goes on and on.

Based on very similar numbers, the Centers for Disease Control reported, "Significantly greater prevalence of chronic symptoms" in Persian Gulf War veterans. But, not the Department of Defense. No. They said the problems that they were finding were not much greater than the general population. No particular problem here. No problem and we're going to prove it.

And now comes confirmation of what we all feared, and many soldiers already knew—that our soldiers did face exposures to deadly agents like mustard and sarin gases. But, since we've been so busy trying to prove that there's no problem, we've seen precious little—at DOD or elsewhere—to probe the health effects of those deadly nerve agents. More importantly, we have seen little effort to probe the health effects on soldiers who were exposed to various insecticides and repellents, and given drugs to fight nerve agents—drugs which may, themselves, have had the opposite effect, drugs which may have worsened the effects of sarin. We just don't know because we've been too busy proving that we have "no problem."

As we've all heard over the past few weeks, the Presidential Advisory Committee on Gulf War Veterans' Illnesses heard what we would have to call nothing less than scathing reports about DOD's management of the PGW illness investigation. Words like inflexible, not credible, superficial, no confidence in DOD's efforts.

Mr. Chairman, we can do better and we must do better. That's why I've decided to call upon the President to bring new health leadership to the DOD. There are many dedicated scientists in and out of government that will give their all to get to the bottom of these mystery illnesses. And there are some of us in the Senate who feel very, very strongly about this and have dealt with many of these people and are very, very angry—that is an emotion, that is correct—about the lack of attention that they have been receiving. But these people who want to get to the bottom of these mys-

tery illnesses cannot do it while those at the top continue to insist that we have no problem.

It's time for a change, Mr. Chairman, and I thank you.

SSCI Chairman SPECTER. Thank you very much, Senator Rockefeller.

Senator Thurmond, Chairman of the Armed Services Committee, would you care to make an opening statement?

Senator THURMOND. Thank you very much, Mr. Chairman.

Mr. Chairman, as the senior Member of the Veterans' Affairs Committee, and I was there when it was organized—as you know, I've been around here a long time—I'm vitally interested in all veterans and their welfare. The exposure of our armed forces personnel to chemical nerve agents is a matter of great concern. The well being of those who served in the Persian Gulf is an issue that I have vigorously pursued. As Chairman of the Armed Services Committee, I have included provisions in defense authorization bills establishing the Persian Gulf War Registry, providing funding for research, and directing a study on low level exposures to nerve agents.

Of course, under the lead of Senator Shelby, the Committee did a study in various nations in the coalition regarding possible exposure, and I commend Senator Shelby for his good work. In 1994, the Department of Defense sent a summary to Congress to report the findings of a Defense science board review of Iraq's chemical/biological warfare use during the Persian Gulf War. That summary reported that the task force found no evidence of overt intentional use of biological or chemical weapons by the Iraqis. Furthermore, their investigation found no credible source of low levels of exposure to chemical weapons, making such exposure unlikely.

Mr. Chairman, we now know that our troops were exposed to nerve agent released as a result of post-war demolition of chemical rockets at an ammunition storage area in Iraq. The Pentagon acknowledged it has known since November 1991 that nerve weapons were stored in Iraq but claims it had not realized U.S. troops were involved in a March 1991 depot destruction.

In light of these developments it is critical that the government continue to identify those who may have been exposed to nerve agents, to assess their health, and to continue to provide medical care.

Mr. Chairman, as we discuss these concerns, let us keep in mind that we are dealing with more than words or reports. What is at issue is the treatment of human beings, men and women who served their country. This Committee has previously heard the testimony of numerous veterans who went to the Gulf in excellent health and returned with various illnesses and disabilities. Included in the list of complaints are swellings, headaches, rashes, pain in the joints, chronic fatigue, neurological disorders, respiratory troubles, and flu like symptoms.

I believe both the Department of Veterans' Affairs and the Department of Defense are concerned for the well being of those who served in the Persian Gulf. The Department of Veterans' Affairs has taken action to address the many mysteries surrounding the various ailments commonly described as Persian Gulf Syndrome. Such actions include the establishment of the Persian Gulf Registry

to provide health exams and health monitoring of veterans, as well as the institution of various research programs to identify the causes of the unexplained illnesses reported by Persian Gulf veterans.

Mr. Chairman, I thank the Chairmen of both the Committees for holding this important hearing today. I look forward to reviewing the testimony of the witnesses and working with you to make sure our veterans are treated fairly and honorably.

And thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you very much, Senator Thurmond.

Senator Shelby, would you care to make an opening statement?

Senator, SHELBY. Thank you, Mr. Chairman.

Mr. Chairman, I ask that my whole statement be included in the record.

SCCI Chairman SPECTER. It will be, without objection.

[The prepared statement of Senator Shelby follows:]

STATEMENT OF SENATOR SHELBY, GULF WAR SYNDROME

Mr. Chairman, I wish to address what has been a shameful campaign of obstruction and delay by the Pentagon and this Administration concerning the Gulf War Syndrome.

Nearly three years ago, I conducted my own investigation as a member of the Senate Armed Services Committee and Chairman of the Personnel Subcommittee. At the request of a growing number of Gulf Veterans from Alabama suffering from unusual and inexplicable illnesses, I traveled to the Gulf and spoke with our allies. After interviewing commanders and soldiers directly involved, I concluded that low-levels of chemical agents were present in the Gulf theater of operations. I found that Czech Chemical Units and other Coalition units accurately reported to Central Command Headquarters the presence of chemical agents at various locations. Throughout my investigation, our coalition allies were forthcoming and very helpful.

In contrast with our allies willingness to cooperate, the Pentagon was reluctant to provide information necessary to prove or disprove allegations about the presence of chemical agents in theater. I was constantly challenged by the Department's evasiveness, inconsistency, and reluctance to work toward a common goal. As the years passed, a pattern of denial and delay became standard operating procedure for the Pentagon.

Mr. Chairman, in June of this year, nearly two-and-one-half years after I submitted my report to the Senate Armed Services Committee, the wall of official denial began to crumble. Finally, the Pentagon conceded that American Troops may have been exposed to nerve agents shortly after the Army destroyed a weapons storage complex in Southern Iraq. At that time, Mr. Chairman, the Pentagon assured us that only three to four hundred soldiers were involved.

Just last week, in the face of overwhelming evidence—evidence, Mr. Chairman, that was available over five years ago—the Pentagon finally confirmed what I reported nearly three years ago and what many Gulf War Veterans already knew. Possibly thousands of soldiers may have been exposed to low-levels of chemical agents in the Gulf War.

Why the change in position? Well, the Pentagon now tells us that they "recently" discovered that a second destruction site contained an unknown quantity of rockets loaded with chemical agents, including the deadly nerve agent sarin. We were told that the original destruction would create only a three mile dispersion area. With the discovery of the second site, the dispersion area has now grown to fifteen miles and may grow further yet.

What else do we know?

We know that the Department's Persian Gulf Veterans' Illness Investigation Team is aware of at least seven other chemical weapons detections that even the Pentagon concedes "cannot be discounted."

We know that the Pentagon considers the Czech detections of chemical agents to be "credible."

We know that Gulf War veterans know of and have testified to many more chemical alarms than the Pentagon is willing to verify.

For example, members of the 24th Naval Construction Battalion say something exploded over their camp in Northern Saudi Arabia on January 19, 1991. As a dense mist descended on their camp, they experienced burning skin, numbness, and difficulty breathing. We know that their chain of command told them that the explosion was a sonic boom and that they shouldn't discuss what happened that night. Many of those sailors now suffer from inexplicable illnesses.

One would think, Mr. Chairman, that in the face of an overwhelming body of evidence, the Pentagon would concede that these exposures could be, at the very least, one cause of the debilitating symptoms known as "Gulf War Syndrome." Unfortunately, Mr. Chairman, concessions by the Pentagon have not been forthcoming.

Mr. Chairman, I welcome the Pentagon's newly discovered candor after nearly five years of denial, evasion and cover-up. But, the Pentagon has a long way to go before the whole truth is known. That is why we must keep the pressure on the Pentagon, the Veterans Administration, and the President to stay the course and get to the bottom of this for the sake of our soldiers, sailors and airmen.

In hearing after hearing, I have listened to our military commanders tell me that their greatest asset is their people. When it comes to Gulf War Syndrome, Mr. Chairman, their actions belie their words.

I cannot tell you why a government that sent its finest into battle remains deaf to the desperate cries of its faithful. I have heard their voices, Mr. Chairman, and I intend to take action as you have by holding this hearing. I will ask the Chairmen of the Defense and VA Committees to also hold hearings so that we can be satisfied that all that can be done, is being done.

We must uncover the whole story of the Gulf War. We must know that our fallen heroes are getting all the care that they need. We must also ensure that we are preparing our troops for similar threats in future conflicts.

If we lack knowledge, we must gain it. If we lack resolve, we must marshal it. If we lack the courage to face the truth, we must find it. That much, Mr. Chairman, we owe those who served with honor and distinction and risked everything, simply because we asked them to.

Senator SHELBY. I have a few brief remarks here.

I'm pleased, Mr. Chairman, and I want to commend you for holding this joint hearing on what has become known as the Gulf War Syndrome or the exposure of our military personnel to chemical agents during the Gulf War. However, I must tell you that I'm very disappointed with the Pentagon and this Administration regarding this matter. In particular, I'm disappointed mainly because it had directly affected our troops, and I believe we all have a responsibility to ensure their health and their welfare.

Just last week, Mr. Chairman, in the face of overwhelming evidence, evidence, Mr. Chairman, that was available over five years ago, the Pentagon finally confirmed what our Gulf War veterans already knew, that thousands of our troops were exposed to chemical agents in the Gulf War. And Mr. Chairman, once again I cannot help but observe that while our Pentagon talks about force protection of our troops having a very high priority, that the Defense Department talks about its concern about the health and welfare of its soldiers, Marines, airmen, and sailors, its inactions, the Pentagon's inactions, its delays, its misplaced reports, its incomplete data after five years, Dr. Joseph, all point toward an Administration that cautions on the side of what looks good in the eyes of the press.

The issue, I believe, is a shameful campaign of obstruction and delay, really delay here. I'm concerned about the Defense Department's reluctance to assist our Gulf War Syndrome vets, the department's lack of caring of its own troops and the fact that our vets are having to prove their own case.

My bottom line fear, Mr. Chairman, is that we find out that the Gulf War Syndrome may have been the direct result of U.S. Defense Department action. This past week's—or this week's News-

week Magazine notes that in October 1991 the U.N. submitted a report that has suddenly reappeared from a Washington file drawer. This report, which I have not seen, indicates that the U.S. Army's 37th Engineer Battalion had twice blown up sarin-filled rockets, setting off huge plumes of smoke and dust that carried deadly debris downward, possibly exposing as many as 25,000 U.S. troops. In addition, another article in the same Newsweek issue describes the deadly combination of an anti-chemical drug taken by 400,000 U.S. troops and a widely used desert insect repellent used by thousands of these same troops.

Thus, I believe there is information that suggests that the U.S. government is responsible to a degree for the Gulf War Syndrome.

Mr. Chairman, I look forward to hearing from the witnesses, but this is a matter that's not going to go away, shouldn't go away, but should be ventilated, exposed, and we should do something for our veterans.

SSCI Chairman SPECTER. Thank you very much, Senator Shelby.

Senator Craig, would you care to make an opening statement?

Senator CRAIG. Thank you very much, Mr. Chairman.

I will be brief, but I did want to express my concern along with my colleagues here today. And I thank you and Senator Simpson for agreeing to hold this joint hearing.

I, like most of us, have been briefed many times on the topic of chemical weapons' use during the Persian Gulf War and have followed very closely announcements about the destruction of the chemical plants by our forces, and the destruction in Kamisiyah. All too often, briefings I have received provided new information which challenged or even contradicted the information received earlier. I have reviewed the testimony of veterans who argue that they left America as the finest, healthiest force this nation ever produced, only to come home sick with vague symptoms.

Initially these claims were discounted. But as more and more veterans come forward with similar symptoms, we cannot continue to ignore them. And these Committees will not ignore them. You've heard the Senator say already, there's been tremendous action, tremendous effort to find, and now, of course, the great revelations are occurring.

The search for answers is never an easy task. However, the answer to the questions about what, if anything, has happened to our Gulf War veterans is one which we will not ignore and cannot be ignored any longer. If we have the answers for these mysterious ailments, we have a responsibility to give these veterans full disclosure. If there are no answers, the government must ensure that these same veterans have options available to enable them to seek the help, which they need.

And so I thank you very much, Mr. Chairman. And I ask unanimous consent that my full statement become a part of the record.

SSCI Chairman SPECTER. Without objection, your full statement will be made a part of the record.

[The prepared statements of Senator Craig and Senator Campbell follow:]

STATEMENT OF LARRY E. CRAIG, UNITED STATES SENATOR

Mr. Chairman, I look forward with great interest to this hearing on the subject of military personnel exposure to chemical agents during the Persian Gulf War. Before we begin however, I just want to add my personal appreciation to the comments of the many others who have previously recognized Senate Veterans' Affairs Committee Chairman Al Simpson for his many years of dedication and service in support of veterans and veterans issues. Senator Simpson (Al). You will be sorely missed.

I have been briefed many times on the topic of chemical weapons use during the Persian Gulf War and have followed very closely the announcements about the destruction of chemicals by U.S. forces in Khamisiyah. All too often, briefings I have received provided new information which challenged or even contradicted information received earlier. I have reviewed the testimony of veterans who argue that they left America as the finest, healthiest force this nation has ever produced only to become sick with vague symptoms upon their return home. Initially, these claims were discounted, but as more and more veterans come forward with similar symptoms, we cannot continue to ignore that which we cannot explain.

The search for answers is never an easy task. However, the answers to the questions about what, if anything, has happened to our gulf war veterans is one which we cannot ignore. If we have the answers for these mysterious ailments, we have a responsibility to give these veterans full disclosure. If there are no answers, the Government must ensure that these same veterans have options available to enable them to seek the help they need.

Mr. Chairman, answers are all that I am looking for. And, I suspect that is what our veterans want as well. Once again, thank you for scheduling this hearing to let us hear firsthand, more about what actually occurred during the Persian Gulf War. Using the benefit of hindsight, we may arrive at different solutions today from those anticipated five years ago.

STATEMENT OF SENATOR CAMPBELL

Mr. Chairman, I would like to thank you for allowing me to submit my statement for the record as my recent accident unfortunately prohibits me from taking part in today's hearing. It is particularly unfortunate that I can not be at this last hearing of the 104th Congress to personally thank you for your outstanding and memorable leadership as chairman of the Senate Veteran's Affairs Committee. Your commitment to the needs of the veterans of this country, along with your wit and wisdom, have made for a leadership style that will not be repeated nor forgotten. You will truly be missed.

I appreciate your convening today's hearing which will examine recent reports that indicate U.S. military personnel were possibly exposed to chemical nerve agent during post-Persian Gulf War bunker destructions in Iraq.

Although the past actions of the Department of Defense regarding this are presently uncertain, I am concerned with the possibility that the DoD could have withheld information concerning the exposure of U.S. military personnel to nerve agents during their service in the Persian Gulf War. In the particular instance that we will examine, several thousand troops may have been exposed as many of those involved report chronic illnesses that they believe to be linked to this exposure. I certainly hope that we are able to clarify this information and its negative implications so that together we may move on to taking care of the our afflicted veterans.

I know that neither the members of this committee, nor the veterans of this country want to see a repeat of the Agent Orange fiasco of the Vietnam conflict in which thousands of veterans were given false information about their condition and later died from their exposure. It is wrong to expect our young people to go to war, place their lives in danger, and then return, only to be forgotten during peacetime.

I thank the chair, and please know that I look forward to reading the record of proceedings and testimony which you have all submitted.

SSCI Chairman SPECTER. Senator Hutchison, do you care to make an opening statement?

Senator HUTCHISON. Yes, thank you, Mr. Chairman.

We have heard of the Kamisiyah munitions depot in southern Iraq that was blown up by the 37th Engineering Battalion. There was clearly a lack of communication between the CIA, the United Nations, and our Department of Defense about whether we knew

that our Army had, in fact, blown up this munitions depot and whether there was chemical weaponry in there. But in fact, it has been confirmed that there was a nerve agent released as a result of that in a CIA report.

Now that we have put all of this together, rather than look backward, except for learning experiences, I think it is important that we do everything possible to try to work with the people that have possibly been exposed to this nerve gas and other chemicals that might have happened in the Persian Gulf, because now in addition to all the symptoms that we're hearing about, it appears that there are birth defects in the children of these veterans.

I think we need to stop talking about whether this is the DOD responsibility or the Veterans' Affairs responsibility. We need to start documenting everything that is happening to those people who might have been exposed to this kind of chemical and see if there are, in fact, now more birth defects that are occurring in the children of these veterans. We need to have good, solid data regardless of whose responsibility it is. We need to err on the side of doing too much, not on the side of doing too little.

I am very pleased that all of you came. I appreciate it. I hope that at the end of this hearing, if there are questions at all, that we would go forward to do too much rather than use as a hook that there are questions and therefore we do nothing.

Thank you.

SSCI Chairman SPECTER. Thank you, very much Senator Hutchison.

Senator Wellstone.

Senator WELLSTONE. Thank you, Mr. Chairman. I, too, will be very brief so we can get right to the testimony.

I just want to say two quick things. One is I remember Senator Rockefeller, I think it was in August of '94, when we had a hearing, and we had some Persian Gulf veterans coming in, and we also actually had some atomic vets. And there was, I think, unfortunately a similar pattern. With the atomic vets, we go back to the early '50s, they had been talking about their health problems and illnesses, and those of their children. And, you know, people kept saying we don't have enough information. They're wrong. And, of course they're still waiting for just compensation.

Then I remember we had some Gulf veterans talking in very personal terms about burning semen and very graphic personal testimony. And it was as if nobody believed them.

And so I just think that this hearing is extremely important. There are some—I'm not here to point the accusatory finger or to take cheap shots at anybody, Mr. Chairman—but I think there are some really tough questions that need to be answered.

I'm just going to mention two that I'm very interested in. And I'll just read them.

One is why did the DOD maintain that no chemical agents were detected and no chemical munitions were forward deployed in forward areas occupied by the United States in the Gulf when it had information for nearly five years that an Iraqi munitions depot destroyed by U.S. troops on March 4, 1991, contained chemical weapons, exposing them to mustard gas and sarin, a nerve agent? This

is a why question. This is the sort of question that troubles veterans, their families and all of us.

When first announcing this incident on June 21, DOD estimated that 300 to 400 American troops may have been exposed to nerve and mustard gas. Early this month, investigators for a Presidential advisory panel said that they believed as many as 1,100 were exposed in that incident. However, just last week, the Pentagon announced a second low-level exposure to chemical weapons also occurred in March, 1991, six days after the first exposure and two miles from where the first incident took place.

Consequently, the Pentagon said it would warn 5,000 Persian Gulf veterans that they may have been exposed to nerve gas, and the DOD spokesman added, Mr. Chairman, quote, "It was possible the number will grow," end of quote.

Is it any wonder—and I'm sorry, I'm not trying to take advantage of the situation, and I feel like it's almost too easy to do and I don't want to do that—but just to pose the question to set the mood for this very important hearing—and thank you, Mr. Chairman, for taking the initiative—is it any wonder that our Persian Gulf veterans question the Pentagon's credibility on this issue and strongly suspect a cover-up? I mean, given the kind of information that keeps trickling out and given the contradictions.

So, Mr. Chairman, I think it's going to be a tough hearing. I think each one of these witnesses are professionals. I think it's very important we listen to them. But I, too, find myself indignant about what's happened to the veterans and the fact that not everyone has been as forthcoming with information, as I wish they had been. I hope this hearing will really provide us with that information.

My final point—and I know, Mr. Chairman, it's beyond the scope of this hearing—is that I hope right now, the way compensation is—I understand, this will take 30 seconds—you've got to show that the illness has occurred within two years after having served. I've got to tell you, with all the information that's coming out, Dr. Kizer, we've got to change that. Not to do so would be patently unfair to the Persian Gulf veterans.

SSCI Chairman SPECTER. Thank you very much, Senator Wellstone.

Senator Bryan.

Senator BRYAN. Thank you very much, Mr. Chairman.

We live in a time in which there is a rising tide of public cynicism directed at government at all levels. Sadly, many Americans believe that their government lies to them, consciously withholds information, misleads them. I must say that the manner in which this information with respect to the so-called Gulf Syndrome—the fatigue, the headaches, the decreased short-term memory, rashes, pain in the joints, all of which we've heard a great deal about over the past five years—gives those citizens very little comfort that the government has been candid and forthcoming.

We were assured for a period of five years that none of our troops were exposed to chemical weapons in the Gulf. Notwithstanding the request of this Congress, thousands of veterans, some 60,000 of which have received medical examinations as a result of concerns about their health as a result of their service in the Gulf, we were told no one was exposed. Now in June, suddenly, as my col-

league, Senator Wellstone points out, we learn that there was exposure. And the question arises—as he points out—why was it for a period of five years, notwithstanding repeated requests from veterans, from members of Congress, from others, that we were assured that there were no chemical weapons that our troops were exposed to. I mean, I must say that I'm eager to hear the response. But this kind of action is simply unacceptable. We have to do a better job if we're to retain any kind of credibility.

And now, we're facing a moving target, as Senator Wellstone pointed out. From 300 to 400 the numbers suddenly leaped to 1,100 and now 5,000 and we're told that there may be many more.

I must say, Mr. Chairman, and I do commend you for convening this hearing, the American public and particularly those veterans whose health has been effected as a consequence of their service deserve an explanation. And they deserve more than just, well, we're going to get to the bottom of this. They need to be provided answers now.

So, I'm most interested, Mr. Chairman, to hear the response from our witnesses as to how this unfortunate situation and the handling of it has evolved.

And I thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you very much, Senator Bryan.

Senator Jeffords.

Senator JEFFORDS. Thank you, Mr. Chairman.

I appreciate you holding these hearings. To me, it's incredibly important that we find what happened here. I, too, was present when we received testimony years ago that there was no evidence of anything occurring. And all of a sudden now we find this evidence. We find ourselves, once again, discussing the disturbing issue of the Persian Gulf War syndrome.

This morning our focus turns to the Department of Veteran's Affairs and Defense, in particular the VA's health activities for the Persian Gulf veterans, as well as the DOD's failure to provide crucial information until five years after demolition operations of the U.S. Army's 37th Engineering Battalion immediately following the Gulf War.

The issue of the Persian Gulf War syndrome has troubled me for some time. Congress has continued to try and address the problem, its medical aspects as best we can with the evidence available to us. Efforts by the Senate and the House Veterans' Affairs Committees have yielded some very positive results. The Persian Gulf War Veterans Benefit Act of '94 was a bipartisan effort and authorized the Secretary of Veterans' Affairs to provide treatment and compensation for Persian Gulf War veterans suffering from undiagnosed illnesses manifested during the war.

Congress also gave the VA the authority to disseminate research grants for government, non-government and academic institutions on possible causes and treatment of the Gulf War syndrome. I understand that Chairman Simpson has spoken on this matter, so I will not go further.

I have had the opportunity to review some of the material before us today. The first question that comes to my mind is why the United Nations Special Commission report took five years to surface. Also, why the DOD dismissed the report in November of 1991

as irrelevant, and why there was not even an attempt to check the validity of the report by the DOD back when it was released.

There are larger, less explainable questions that may not be answered here today. How are our veterans expected to keep their faith in the Defense Department that at best failed to closely examine important evidence, while repeatedly and confidently stating that they had no evidence linking veterans' illness and the exposure of our soldiers to chemical or biological weapons. Also, how is Congress expected to make educated decisions to provide veterans treatment, and compensation too, in light of DOD's handling of the documents which were released.

Had the Presidential advisory panel not reexamined the UNSCOM report we would not be holding this hearing. And veterans who were exposed to nerve agents would continue to be completely mystified as to why they're sick. I understand the enormous cost to the Federal government by providing life-time treatment and compensation to everyone of some 60,000 veterans in the Persian Gulf registry. However, we should know by now from many previous experiences on veterans' illness and military service, the only way to come to solid conclusions based on scientific evidence is be honest, open and thorough from the beginning. Our veterans have earned that much and more.

Thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you very much, Senator Jeffords.

We frequently don't go to opening statements but we have today because this is, if not the first, one of the first hearings on this subject and I thought we ought to set the stage. We have a large group and it's been sort of a rolling arrival of Senators.

We'll now turn to Senator Robb.

Senator ROBB. Thank you, Mr. chairman.

In view of the number of Members participating in this hearing, I will not make an opening statement. I thank you and Chairman Simpson for holding this hearing. It's on a topic that has concerned many of us over a long period of time. And anything that we can do to provide factual answers to difficult questions will be very much appreciated by a very large segment of our population. I think that the intelligence aspects of this are important. I also think the fact that we're having a joint hearing is a good sign, and I thank you.

SSCI Chairman SPECTER. Thanks very much, Senator Robb.

Senator Kerry of Massachusetts.

Senator KERRY of Massachusetts. Mr. Chairman, thank you very much.

Just a very brief comment, if I may. And I thank both you and Senator Simpson for holding this hearing. I'd also like to thank, if I can, Senator Rockefeller for his steadfast attention to this issue. He really started fighting this battle before anybody else in the Congress several years ago. And he did it because he was listening to the complaints of a lot of veterans that a lot of us were hearing. And there are really two levels on which I think we should express concern here today about the hearing.

I think all of us read the recent articles about new evidence with significant consternation, and some increased measure of concern

for the accountability process. And so, it's important to have this hearing to really begin to sort the series of questions that have been posed, and responses to them over a period of time, and now the real state of the evidence.

There's another level on which I think we all ought to express some concern. There is a great reminder to me in this of the long battle we fought with respect to Agent Orange, and presumptions about cancer and exposure to spraying, and the long fight that veterans have to engage in in order to get the government that employed them to respond to their needs. It was too long a fight. And I personally am very concerned that now a whole new wave of veterans are going through a similar process.

Some of us were over in the Gulf within hours of the end of the war. I know John Warner was there, along with myself, the later John Heinz, and a few others. And I will never forget flying through a layer of dark cloud, and coming out where the sun ceased to exist, and there was just blackness with fires everywhere. And I remember just on the level of air we were breathing being very happy to leave after a few hours, and talking to some of the young soldiers there who were exposed to just that quality of air over a certain period of time.

My attitude has always been that those people deserve presumption. And I think there has been a great sort of still-arm attitude, fundamentally by those who responsibility it is to make sure that people who serve their country, and put on the uniform of our country and go into harm's way, are given every presumption in their favor.

So, this hearing serves two purposes. It's really to try to clear the history with respect to that treatment and guarantee that perhaps there is an attitudinal shift as well as to try to determine the facts of what happened and what specific cause might be behind the so-called Gulf War syndrome.

And I thank you, Mr. Chairman, for engaging in this.

SSCI Chairman SPECTER. Thank you very much, Senator Kerry.

Since the hearing began, I have been provided with a copy of a letter dated today sent by the Deputy Secretary of Defense—the Secretary of Defense, I understand it, is out of the country. The letter is sent to Senator Thurmond in his capacity as chairman of the Senate Armed Services Committee. Neither Senator Simpson, head of Veterans, nor I received a copy—a little strange. And I think it is worth noting that the Department of Defense now notes that at the end of the Gulf War, American troops moved rapidly through Iraq destroying ammunition storage facilities.

And it goes on. Another line says, the troops were unaware of this at the time. At this time, we do not know if U.S. troops were exposed to toxic chemicals during these events. A little strange that the Department of Defense at this point does not know whether U.S. troops were exposed to toxic chemicals during these events.

One of the purposes of having extensive statements made by the Senators today, is to show the very strong sentiment of the Senate and concern and really sort of disgust about what the Department of Defense has done. And then Deputy Secretary White says that, I am today initiating a number of immediate and long-term activities with regard to the department's efforts toward this issue.

But I think it is significant that it is done on the day when these hearings are convened, that there is suddenly a response which underscores the need for Senate oversight. It wasn't sufficient that several weeks ago that the investigators for the President's Advisory Commission said that the credibility of the Defense Department has been gravely undermined by it's inquiry into the Iraqi chemicals injuring U.S. troops.

And just 30 second of a personal note, I had started the comment but didn't say much, just a word more. When I was growing up, my earliest recollections were my father, who was wounded in World War I in the Argonne Forest, carried shrapnel in his legs until the day he died. And I remember as a child the March on Washington in 1932. And my father was very sorry he couldn't go from Wichita, Kansas to that march.

And when someone has a claim, they can ordinarily present it in court. And if you have medical testimony you can get to a jury, and a jury can decide the matters. That's not possible when the claim is against the United States government because of the doctrine of sovereign immunity. And we've gone through a similar line with Agent Orange and many, problems. But I think you have a fair representation of the sentiment of the Senate today, just by way of a backdrop, as we proceed now to the witnesses.

And we first welcome Mr. John McLaughlin, who is the Vice Chairman for Estimate of the National Intelligence Council and the key officer on a matter like servicemen and service women's exposure to toxic materials. Mr. McLaughlin has a very distinguished record with the CIA, going back to 1972. He's served in most of the center in the world. And before turning to Mr. McLaughlin let me yield to our distinguished Vice Chairman. I know the Intelligence Committee had other commitments, and has just joined us.

SSCI Vice Chairman KERREY. Thank you very much, Mr. Chairman.

I have a statement that I'd like to include in the record. But I want to express it in—I say it in my opening paragraph that we still have considerable amount of gratitude for—and great concern for the brave men and women who served in the Persian Gulf war and we owe a great debt to the soldiers who fought to liberate Kuwait.

Part of paying that debt, is that we should not let this victory translate into personal tragedy for anyone, any soldier who may be suffering from unique and unexplained sicknesses that were caused by their service. And I appreciate very much this joint hearing, and look forward to the testimony of the witnesses.

SSCI Chairman SPECTER. Thank you very much, Senator Kerry.

Welcome, Mr. McLaughlin. We would appreciate if you could summarize your written testimony. Your full statement will be made part of the record. We'd like to hold the opening rounds of questions to five minutes, leaving the maximum amount of time for dialogue, questions and answers with the panel.

The floor is yours, Mr. McLaughlin.

[The prepared statement of Mr. McLaughlin follows:]

STATEMENT OF JOHN E. MCLAUGHLIN, VICE CHAIRMAN FOR ESTIMATES, NATIONAL INTELLIGENCE COUNCIL

Chairman Specter, Chairman Simpson, and other Members of the Committees, I am pleased to appear before you this morning to discuss our ongoing efforts related to reports of possible exposure of our troops to chemical or biological agents in the Persian Gulf. Our Director strongly supports CIA's work on this important issue and continues to encourage us to bring forth important results of our study. Today I will provide CIA's key findings, background from our analysis on this issue, and a historical account of our assessments related to Gulf war illnesses.

KEY FINDINGS

On the basis of a comprehensive review of intelligence, we assess that Iraq did not use chemical or biological weapons or deploy these weapons in Kuwait. In addition, analysis and computer modeling indicate chemical agents released by aerial bombing of chemical warfare facilities did not reach U.S. troops in Saudi Arabia. However, we have identified and will discuss potential fallout concerns in the case of a rear-area chemical weapons storage bunker in southern Iraq.

CIA ANALYSIS OF IRAQI CHEMICAL AND BIOLOGICAL WARFARE PROGRAM

CIA has made a concerted effort to conduct a comprehensive review of intelligence related to Gulf war illnesses since March of last year. Our systematic review of intelligence has been done in parallel with DOD's Persian Gulf Investigative Team. Our study is a detailed investigation into intelligence information—not troop testimony, medical records, or operational logs. The CIA's effort seeks to complement that of DOD. CIA analysts draw upon and examine DOD information to clarify intelligence, to obtain leads, and to ensure a thorough and comprehensive intelligence assessment. CIA and the Investigative Team continue to coordinate our work. We inform the Investigative Team of relevant information on potential chemical or biological exposures for follow-up. Likewise, the Investigative Team shares relevant results that aid our study.

Our study involves two areas: research and focused investigations. We have reviewed thousands of intelligence documents. Intelligence reports that relate to possible chemical and biological weapons use, exposure, or location are scrutinized to determine their credibility and whether follow-up is warranted. In addition, we have expanded and more fully documented our assessments of Iraqi chemical and biological warfare capabilities at the start of Desert Storm. Using this research base, an investigation is then made into each of the key areas—use, exposure, and location—and specific areas are examined when possible leads are found. This was a necessary process to assure that our study is comprehensive.

TIMELINE OF CIA ACTIVITIES

What follows is a chronological account of key events related to CW agent release. We have decided on this approach because of the complexity of the topic.

CIA has long followed Iraq's chemical and biological programs as part of its mission to assess CW and BW capabilities worldwide. Before the Gulf war, we assessed that Iraq had a significant CW and BW capability, including chemically armed Scuds, and had used chemical weapons on numerous occasions against Iran and its own citizens. At the start of the air war and continuing to the end of Desert Storm, the DI's Office of Scientific and Weapons Research established a 24-hour chemical and biological watch office. These analysts screened incoming intelligence for evidence of chemical or biological weapons use and followed every Scud launch. The CIA participated in targeting studies for CW and BW facilities that resulted in targeting of 32 separate sites. It is important to note that Khamisiyah was not identified or targeted as a CW facility during the war.

CHEMICAL FALLOUT FROM AERIAL BOMBING IN IRAQ

Starting at the left of the chart you see that during the air war the Coalition bombed suspected CW sites. On the basis of all currently available information, we conclude that coalition aerial bombing resulted in damage to filled chemical munitions at two facilities—Muhammadiyat and Al Muthanna—both located in remote areas west of Baghdad. According to the most recent Iraqi declarations, less than 5 percent of Iraq's approximately 700 metric tons of chemical agent stockpile was destroyed by coalition bombing. In most cases, the Iraqis did not store CW munitions in bunkers that they believed the Coalition would target. The Iraqis stored many of the CW munitions in the open to protect them from Coalition detection and

bombing. In addition, all known CW agent and precursor production lines were either inactive or had been dismantled by the start of the air campaign.

Our modeling indicates that fallout from these facilities did not reach troops in Saudi Arabia. At Muhammadiyat Storage Area, Iraq declared that 200 mustard-filled and 12 sarin-filled aerial bombs were damaged or destroyed by Coalition bombing. Bombing of this facility started on 19 January and continued throughout the air war. Analysis of all available information leads us to conclude that the earliest chemical munition destruction date at Muhammadiyat is 22 January. We have modeled release of 2.9 metric tons of sarin and 15 metric tons of mustard for all possible bombing dates. For these days, as for the whole time period of the bombing, southerly winds occur on only a few days. The board in front of you shows the maximum downwind dispersions in the general southerly direction for sarin and mustard cut off at about 300 and 130 km respectively. Neither the first effects nor the general population limit levels reached U.S. troops that were stationed in Saudi Arabia.

At Al Muthanna, the primary Iraqi CW production and storage facility, Iraq declared that 2,500 chemical rockets containing about 17 metric tons of sarin nerve agent had been destroyed by Coalition bombing. Analysis of all available information leads us to conclude that the earliest chemical munition destruction date is 6 February. Of the days that the bunker at Muthanna could have been bombed, winds were southerly on only 8 February. For the general population limit dosage the most southerly dispersion on 8 February is 160 km, again well short of U.S. troops.

CHEMICAL WEAPONS IN KUWAIT THEATER OF OPERATIONS

Again referring to the timeline, on 4 March 1991 U.S. troops destroyed nerve agent-filled 122mm rockets in a Bunker at Khamisiyah. On 10 March 1991 they also destroyed CW rockets at a Pit area near Khamisiyah. The munitions were not marked, no acute injuries resulted and thus the troops and the CIA were unaware at the time that chemical munitions were destroyed.

UNSCOM inspected chemical munitions at or near Khamisiyah in October 1991 and identified 120mm sarin/cyclo-sarin (GB/GF) nerve agent-filled rockets and 155mm mustard rounds. At the time it was not clear whether the chemical weapons identified had been present during the war or whether, as was suspected at other locations, the Iraqis had moved the munitions after the war and just prior to the 1991 UNSCOM inspection. This uncertainty was only cleared up through the recent comprehensive review of all intelligence information and an UNSCOM inspection in May 1996. The following information was obtained by UNSCOM during its October 1991 inspection.

At a pit area about 1 km south of the Khamisiyah Storage Area, UNSCOM found several hundred mostly intact 122mm rockets containing nerve agent—detected by sampling and with chemical agent monitors (CAMs).

In an open area 5 km west of Khamisiyah; inspectors found approximately 6,000 intact 155mm rounds containing mustard agent, as indicated by CAMs.

At a third location, a single bunker among 100 bunkers, called "Bunker 73" by Iraq, remnants of 122mm rockets were identified.

The Iraqis claimed during the October 1991 inspection that coalition troops had destroyed Bunker 73 earlier that year. These Iraqi statements were viewed at the time with skepticism because of the broad, continuous use of deception by the Iraqis against UNSCOM.

During the 1992 to 1995 time frame, CIA's effort focused on identifying Iraq's residual CW and BW stockpile. This effort consisted of assessing Iraq's declarations, refining collection requirements, and interpreting intelligence to attempt to root out remaining Iraqi CW capabilities. The issue of Gulf war illnesses surfaced to national prominence in about mid-1993. CIA was not brought into this issue until March of 1995.

As mentioned earlier, we initiated a comprehensive review of all intelligence related to Gulf war illnesses in March of 1995. In September 1995, CIA identified Khamisiyah as another site for potential CW agent release and asked the DOD's Investigative Team to look into whether U.S. troops were there. We continued researching the issue together and by early March 1996, information was developed that enabled us to conclude that U.S. troops did blow up Bunker 73. However, we still had some uncertainty as to whether the rockets in the bunker were actually chemical.

UNSCOM lacked specific documentation on the type of rockets in Bunker 73 creating concerns for UNSCOM regarding chemical munitions accounting. These concerns about type of munition, especially given more recent UNSCOM understanding of the many varieties or rockets, motivated them to perform a new inspection at Khamisiyah.

UNSCOM's May 1996 investigation removed uncertainty about the type of munitions present in Bunker 73 because they documented the presence of high density polyethylene inserts, burster tubes, fill plugs, and other features characteristic of Iraqi chemical munitions. In addition, Iraq told the May 1996 UNSCOM inspectors that Iraq moved 2,160 *unmarked* 122mm nerve agent rockets to Bunker 73 from the Al Muthanna CW site just before the start of the air war. According to Iraq, during the air war they moved about 1,100 rockets from the bunker to the pit area 2 km away.

MODELING OF RELEASE OF AGENTS FROM BUNKER 73 AT KHAMISIYAH

Modeling of the potential hazard caused by destruction of Bunker 73 indicates that an area around the bunker at least 2 km in all directions and km downwind could have been contaminated at or above the level for causing acute symptoms including runny nose, headache, and miosis as you see in this figure. An area up to 25 km downwind could have been contaminated at the much lower general population dosage limit.[1] Based on wind models and observations of a video and photographs of destruction activity at Khamisiyah, we determined that the downwind direction was northeast to east.

Some of the modeling assumptions we used were based on data from US testing in 1966 that involved destruction of several bunkers filled with GB rockets of similar maximum range to Iraqi rockets found in Bunker 73.

MUSTARD ROUNDS NEAR KHAMISIYAH

During the May 1996 inspection, Iraq also told UNSCOM that the 6,000 155mm mustard rounds UNSCOM found in the open area at Khamisiyah in October 1991 had been stored at one bunker at An Nasiriyah until 15 February 1991, just before the ground war. Iraq claims that fear of Coalition bombing motivated An Nasiriyah depot personnel to move the intact mustard rounds to the open area 5 km from the Khamisiyah Depot, where the rounds were camouflaged with canvas. Subsequently, we have been able to confirm that the munitions were moved to this area about this time. Therefore, based on the inspection and confirmation we conclude that the bombing of An Nasiriyah on 17 January 1991 did not result in the release of chemical agent.

ONGOING ANALYSIS OF PT ROCKET DESTRUCTION

Iraq told UNSCOM in May 1996 that they believed occupying coalition forces also destroyed some pit area rockets. DOD's investigation into this possibility has indicated that US soldiers destroyed stacks of crated munitions in the pit on 10 March 1991. From analysis of all information, we assess that up to 550 rockets could have been destroyed. Modeling of weather conditions indicate that the wind was almost due south. We are now modeling the actual hazard area and plan to finish our analysis on the pit in the near future.

CLOSING STATEMENT

We will continue to be vigilant in tracking any lead that surfaces in the future. If we find any information pointing to chemical or biological agent exposures or impacting significantly on the issue of Gulf War veterans' illnesses, we will again work with the Department of Defense to announce those findings.

STATEMENT OF JOHN McLAUGHLIN, VICE CHAIRMAN FOR ESTIMATES NATIONAL INTELLIGENCE COUNCIL

Mr. McLAUGHLIN. Chairman Specter, Chairman Simpson, and other Members of the Committees, I'm pleased to appear before you this morning to discuss our ongoing efforts related to reports of possible exposure of our troops to chemical and biological agents.

Veterans' Chairman SIMPSON. If you could pull that over, please, towards yourself.

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[1] This dosage from Army manuals is for protection of the general population and is a 72 hour exposure at 0.000003 mg/m3—significantly lower than the 0.0001mg/m3 occupational limit defined for 8 hours.

Mr. MCLAUGHLIN. I'm pleased to appear before you to discuss this issue. Our director strongly supports the CIA's work on this important issue and continues to encourage us to bring forth important results of our study. I can assure you we have a strong force of analysts who are working nearly around the clock on this issue and we will bring our findings to your attention as soon as we can.

Today, I'm going to provide CIA's key findings, background from our analysis on this issue, and a historical account of our assessments related to Gulf War illnesses.

Let me preview the key findings. On the basis of a comprehensive review of intelligence, we assessed that Iraq did not use chemical or biological weapons or deploy these weapons in Kuwait. In addition, analysis and computer modeling indicate that chemical agents released by aerial bombing of chemical warfare facilities did not reach U.S. troops in Saudi Arabia. However, we have identified and will discuss potential fallout concerns in the case of a rear area chemical weapons storage bunkers in southern Iraq.

Let me now discuss our analysis of Iraqi chemical and biological warfare program. We've made a concerted effort to conduct a comprehensive review of intelligence related to Gulf War illnesses since March of last year. Our systematic review of intelligence has been done in parallel with DOD's Persian Gulf investigation team. Our study is a detailed investigation into intelligence information, not troop testimony, medical records or operational logs. Our effort seeks to complement that of DOD. CIA analysts draw upon and examine DOD information to clarify intelligence, obtain leads, and to ensure thorough and comprehensive intelligence assessments.

CIA and the investigative team continue to coordinate our work and we inform the investigative team of relevant information as it arises. Likewise, they keep us informed.

Our study involves two areas: research and focused investigations. We've reviewed thousands of intelligence documents. Intelligence reports that relate to possible chemical and biological weapons use, exposure or location are scrutinized to determine their credibility and whether follow-up is warranted. In addition, we've expanded and more fully documented our assessments of Iraqi chemical and biological warfare capabilities at the start of Desert Storm.

Using this research base, an investigation is then made into each of the key areas: use, exposure and location. And specific areas are examined where possible leads are found.

Now let's take a look at a time line of CIA activities on this issue. What follows is a chronological account of key events related to CW agent release. We've decided on this approach because of the sheer complexity of this topic.

CIA has long followed Iraq's chemical and biological programs as part of its mission to assess CW and BW capabilities worldwide. Before the Gulf War, we assessed that Iraq had a significant CW and BW capability, including chemically armed SCUDS, and had used chemical weapons on numerous occasions against Iran and against its own citizens.

At the start of the air war and continuing to the end of Desert Storm, our analysts established a 24-hour chemical and biological

watch office. These analysts screened all of the incoming intelligence for evidence of chemical or biological weapons use. And they followed every SCUD launch. We participated in targeting studies for CW and BW facilities that resulted in targeting of 32 separate sites. It's important to note, that Khamisiyah was not identified or targeted as a CW facility during the war.

Focusing now on chemical fallout from aerial bombing in Iraq. Starting at the left of the chart, you see that during the air war the coalition bombed suspected CW sites. On the basis of all currently available information, we conclude that coalition aerial bombing resulted in damage to filled chemical munitions at two facilities: Muhammadiyat and Al Muthanna, both located in remote areas west of Baghdad. According to the most recent Iraqi declarations, less than five percent of Iraq's approximately 700 metric tons of chemical agent, was destroyed by coalition bombing. In most cases the Iraqis did not store CW munitions in bunkers that they believed the coalition would target. The Iraqis stored many of the CW munitions in the open to protect them from coalition detection and bombing.

In addition, all known CW agent and precursor production lines were either inactive or had been dismantled by the start of the air campaign. Our modeling indicates that fallout from these facilities did not reach troops—these facilities to the west of Baghdad, did not reach troops in Saudi Arabia. At Muhammadiyat storage area, Iraq declared that 200 mustard-filled and 12 sarin-filled aerial bombs were damaged or destroyed by coalition bombing.

Bombing of this facility started on 19 January and continued throughout the air war. Analysis of all available information leads us to conclude that the earliest chemical munition destruction data at Muhammadiyat is 22 January. We have modeled release of 2.9 metric tons of sarin and 15 metric tons of mustard for all possible bombing dates.

SSCI Chairman SPECTER. Mr. McLaughlin, you're right in the middle of an important point, take a little more time.

Mr. MCLAUGHLIN. OK. Let me—let me try and summarize this testimony, rather than giving it to you word for word. Essentially, when we looked at that bombing in northern Iraq, we modeled the results of the coalition bombing, and the board over here will show you that we think the maximum downwind dispersions in a general southerly direction for sarin and mustard cut off at about 300 and 130 kilometers, respectively. Neither the first effects nor the general population limit levels reached U.S. troops that were stationed in Saudi Arabia.

At Al Muthanna, we did a similar modeling and we determined that the winds were southerly on only 8 February. For the general population limit dosage, the most southerly dispersion on 8 February is about 160 kilometers—again, well short of U.S. troops.

Now let me turn to the question of chemical weapons in the Kuwait theater of operations. Again, looking at this timeline, on 4 March, U.S. troops destroyed nerve agent-filled 122-millimeter rockets in a bunker at Kamisiyah. On 10 March, 1991, they also destroyed CW rockets at a pit near Kamisiyah. The munitions were not marked. No acute injuries resulted and thus the troops and the

CIA were unaware at the time that chemical munitions were destroyed.

UNSCOM inspected chemical munitions at or near Kamisiyah in October of 1991, and identified 120-millimeter sarin/cyclo-sarin nerve agent-filled rockets and 155-millimeter mustard rounds. At the time, it wasn't clear whether the chemical weapons identified had been present during the war or whether, as was suspected at other locations, the Iraqis had moved the munitions after the war and just prior to the 1991 UNSCOM inspection. This was only cleared up—this uncertainty—with a comprehensive review of all intelligence, and an UNSCOM inspection in May 1996.

The following information—let me just summarize what the UNSCOM found in 1991. At a pit area about a kilometer south of the Kamisiyah storage area, UNSCOM found several hundred mostly intact 122-millimeter rockets containing nerve agent. In an open area about five kilometers west of Kamisiyah, inspectors found about 6,000 intact 150-millimeter rounds containing mustard agent as indicated by tests on the scene. At a third location, a single bunker among 100 bunkers called Bunker 33 by Iraq, remnants of 122-millimeter rockets were identified. The Iraqis claimed during the October '91 inspection that coalition troops had destroyed Bunker 33 earlier that year. These Iraqi statements were viewed at the time with skepticism—and Bunker 73—these statements were viewed with skepticism because of the broad continuous use of deception by the Iraqis against UNSCOM.

During the 1992 and '95 time frame, CIA's effort focused on identifying Iraq's residual CW and BW stockpile. This effort consisted of assessing Iraq's declarations, refining collection requirements, interpreting intelligence to attempt to root out remaining Iraqi CW capabilities. The issue of Gulf War illnesses surfaced to national prominence, as you know, in about mid-'93. CIA did not begin its independent review of this issue until March of '95.

As mentioned earlier, we initiated a comprehensive review of all intelligence at that time. In September of '95, we identified Kamisiyah as another site for potential CW agent release, and asked the DOD's investigative team to look into whether U.S. troops were there. We continued researching the issue together and, by early March '96, information was developed that enabled us to conclude U.S. troops did blow up Bunker 73.

We still had some uncertainty, however, about whether the rockets in the bunker were actually chemical. UNSCOM lacked specific documentation on the type of rockets in that bunker, creating concerns for UNSCOM regarding chemical munitions accounting. These concerns about type of munition, especially given more recent UNSCOM understanding of the many varieties of rockets, motivated them to perform a new inspection at Kamisiyah. They did this in May 1996. That removed uncertainty about the type of munitions present in Bunker 73 because of the various things they found: high density polyethylene inserts, burster tubes, fill plugs, other things that are associated with Iraqi chemical munitions.

In addition, Iraq told the May 1996 UNSCOM inspectors that Iraq moved over 2100 unmarked 122-millimeter nerve agent rockets to Bunker 73 from the Al Muthanna site in northern Iraq just before the start of the war. According to Iraq, during the air war,

they moved about 1100 rockets from the bunker to the pit area two kilometers away.

Now, let me tell you what we found when we modeled the release of agents at Bunker 73. Modeling of this potential hazard at Bunker 73 indicates that an area around the bunker, at least two kilometers in all directions and four kilometers downwind, could have been contaminated at or above the level for causing acute symptoms including runny nose, headache, miosis as you see in this figure. An area up to 25 kilometers downwind could have been contaminated at the much lower general population dosage limit. Based on wind models, and observations of a video, and photographs of destruction activity at Kamisiyah, we determined that the downwind direction was northeast to east.

Some of the modeling assumptions we used were based on data from U.S. testing in 1966 in bunkers filled with similar rockets of U.S. manufacture.

Now, let me talk about the mustard rounds found near Kamisiyah. During this May 1996——

SSCI Chairman SPECTER. Mr. McLaughlin, would you do your best to summarize?

Mr. MCLAUGHLIN. All right, let me move on to the pit rocket destruction.

Iraq told UNSCOM in May '96 that they believed occupying coalition forces also destroyed some rockets in a pit area near this bunker. DOD's investigation into this possibility has indicated that U.S. soldiers destroyed stacks of crate munitions in the pit on 10 March 1991. From analysis of all information, we assess that about 550 rockets could have been destroyed. Modeling of weather conditions indicate the wind was almost due south. We are now modelling the actual hazard area and plan to finish our analysis on the pit in the near future. Let me just say we're working this very hard, nearly around the clock, and we'll report the results of this modelling to you as soon as it's feasible.

In sum, I would just say you can count on us to be continuously vigilant in tracking any lead that surfaces in the future on this. We share the concerns you've expressed, and we will work it and report our findings to you as soon as we can.

SSCI Chairman SPECTER. Thank you very much, Mr. McLaughlin.

We now turn to Dr. Steven C. Joseph, who is the chief Department of Defense health officer in his capacity as Assistant Secretary of Defense for Health Affairs. Dr. Joseph has a very distinguished academic and professional record, graduating from Harvard College, Yale University School of Medicine, and Johns Hopkins, where he has a masters in Public Health. He was dean at the school of public health at the University of Minnesota, and has served as commissioner of health for New York City.

Welcome, Dr. Joseph, and the floor is yours.

Dr. JOSEPH. Mr. Chairman, distinguished Members of the Committee, I thank you for this opportunity to present a current assessment of the Kamisiyah incidents, other reports of detection and the initiatives under way for our Persian Gulf veterans.

With your permission, I'd ask that my complete statement——

SSCI Chairman SPECTER. Your full statement will be made part of the record and to the extent you can summarize within the five minute limit, the Committee would appreciate it—Committees would appreciate it.

[The prepared statement of Dr. Joseph follows:]

STATEMENT OF STEPHEN C. JOSEPH, M.D., M.P.H., ASSISTANT SECRETARY OF DEFENSE FOR HEALTH AFFAIRS

Khamisiyah represents a major change in our understanding of the health issues and potential exposures of our troops during and following Operations Desert Shield and Desert Storm. This change has required us to re-examine our responses to Persian Gulf Illnesses, and to expand our unprecedented, existing clinical, investigative, declassification and research programs. In light of Khamisiyah, there are seven specific initiatives the Department of Defense is undertaking. These initiatives are:

a. Using our own capabilities and those of the CIA, we are modeling and investigating all aspects of the bunker 73 demolition, the Khamisiyah pit destruction, the 24 Fox vehicle and M256 positive detections, and the two Czech detections.

b. At the direction of the Deputy Secretary, the Army Inspector General will track the chronology of the Khamisiyah incidents.

c. Also at the direction of the Deputy Secretary, the Assistant to the Secretary of Defense for Intelligence Oversight, Walter Jaiko, will compile a chronology of events related to the Khamisiyah incidents and the information concerning those incidents.

d. We are undertaking an expansion of our clinical investigations of those troops known to have been in potential "exposure zones."

e. We have asked the Institute of Medicine, and they have agreed, to have their Committee on the Persian Gulf Syndrome Comprehensive Clinical Evaluation Program (CCEP) re-assess our CCEP clinical protocols in light of plausible incidents of exposure to chemical warfare agents.

f. We have expanded our program of research to include projects examining possible clinical effects of low level exposure to chemical warfare agents.

g. We have asked the Interagency Security Classification Appeals Panel to undertake an objective review of the documents placed on GulfLINK and to make recommendations regarding declassification of documents and their posting on the Internet.

Khamisiyah has changed the paradigm of our approach to Persian Gulf Illnesses. Previously, we had a number of Gulf War veterans who were ill and we sought explanations for those illnesses. Now, we have evidence of possible chemical warfare agent exposures. It is imperative that we now attempt to find clinical evidence that might be linked to those exposures in our troops who were in the "exposure zones."

The Department, while dedicating its energies to the programs addressing Persian Gulf Illnesses and working to re-orient and expand those programs based on the Khamisiyah information, still must look to the future. The Department has initiated a medical surveillance program for all deployments which significantly improves the health screenings prior to and following deployment and requires enhanced preventive medicine and environmental monitoring activities throughout the deployment. We will know the health status of our forces and we will have detailed documentation of potential exposures.

STATEMENT OF DR. STEPHEN JOSEPH, ASSISTANT SECRETARY FOR HEALTH AFFAIRS, DEPARTMENT OF DEFENSE

Dr. JOSEPH. President Clinton promised that we would explore all avenues of potential cause for illnesses, that we would take care of the veterans who believe their Gulf War experience has resulted in a degradation of their health, and that this Administration would put its resources into scientific research to find explanations for these illnesses.

My comments today will address first the most current information we have on the demolition of Bunker 73 and the destruction of weapons in the pit at Kamisiyah, as well as other reports of detections. Then I will describe the actions DOD has taken as a result of this information. Finally, if you permit me with time, I'll

outline the programs the Department has taken to fulfill the President's commitment to care for our Persian Gulf veterans.

Kamisiyah's ammunition storage area, also known as Tel-Alam in southern Iraq, was a large ammunition storage depot before and during Operations Desert Shield and Desert Storm. The Kamisiyah facility contained nearly 100 ammunition storage bunkers, covered a 25 square kilometer area.

Prior to the Gulf War, the intelligence community did not list Kamisiyah itself as a suspect chemical weapons site. As a result, it was not targeted as a chemical facility for coalition bombing. It was not until October 1991, some eight months after the end of Desert Storm that information was identified suggesting the facility did store chemical weapons during Desert Storm.

As you've heard, an UNSCOM team inspected the Kamisiyah ammunition area in October '91 and I will not repeat the detail from Mr. McLaughlin's testimony about the numbers of the munitions. UNSCOM inspectors found several hundred 122-millimeter rockets with a mixture of the chemical nerve agents sarin and cyclo-sarin. These munitions were found in several heaps or piles in a large pit or revetment. Most of these rockets were intact but some appeared to be damaged or destroyed.

At that time the Iraqis told UNSCOM that occupying coalition troops had destroyed chemical weapons at Bunker 73 earlier that year, that is in '91. Iraqi statements, however, were viewed with skepticism at the time because of the broad continuous use of deception by the Iraqis against UNSCOM. And UNSCOM tests for the presence of chemical agents at Bunker 73 were negative.

In March of '92 UNSCOM inspectors returned to Kamisiyah. There they reported that they consolidated and destroyed a total of 463 nerve agent rockets found in the pit area, including the 297 they had found previously in October.

In May of 1996, UNSCOM inspectors returned to Kamisiyah, and for the first time did a thorough evaluation of remanants at Bunker 73. They found that the rockets still remaining in and near Bunker 73 possessed the physical characteristics of 122-millimeter chemical rockets used by the Iraqis, and were the same type which had been found in the pit area. It was at this time that Iraqi officials told UNSCOM for the first time that occupying coalition forces had destroyed the rockets found in the pit area.

Now, back in early March of '91, after the Gulf War cease fire, the 37th engineering battalion, as well as elements of the 307th engineer battalion, both supporting the 82nd Airborne Division, moved into the vicinity of Kamisiyah with a mission to destroy the bunkers and their contents, prior to moving back to Saudi Arabia for redeployment. During the period three to ten March '91, a systematic destruction of the Kamisiyah bunkers was conducted. Explosive ordinance disposal unit personnel supported the engineers during this operation. All EOD members who'd been interviewed stated that they were aware that they might encounter chemical munitions at any ammunition site and were looking for them. At Kamisiyah, they reportedly examined each bunker and did not identify any chemical munitions.

Operational records, intelligence information and personal interviews with over 40 individuals involved in the operation, including

the battalion commander, three company commanders, has enabled a reconstruction of the events which occurred at Kamisiyah between 2 to 10 March 1991. Elements of the 37th engineer battalion moved into Kamisiyah area on March 2. And on March 4th, the engineers destroyed 33 bunkers, one of which was Bunker 73, now identified as containing chemical munitions in May of 1996 by UNSCOM.

I describe the process in my prepared testimony in detail in terms of what was blown when and what was found in the various bunkers.

The 37th Engineering Battalion operations officer stated that on 9 March, he found an unknown number of stacks of long-crated munitions in the pit area as distinct from Bunker 73, which corresponds to the location where UNSCOM teams found the damaged 122-millimeter rockets. And those pit area stacks of munitions were destroyed on the 10th of March. I won't repeat, but I'd be happy to talk in the question period, Mr. McLaughlin's comments about the current CIA modeling which is going on, and what, indeed, they have found in their model for the Bunker 73 area and what they will come up with in the pit area.

The 4,000 to 5,000 potentially affected troops within 25 kilometers of the Bunker 73 detonation of March 4th are being notified and advised of the availability of the DOD and VA evaluation treatment program.

Using our geographic information system, we've identified unit locations near Kamisiyah on 10 March—that's the date that the pit was blown—1991. The 3,000 to 4,000 potentially affected troops within 25 kilometers of the pit destruction on March 10th are also being notified and advised of our evaluation and treatment programs.

There were no chemical casualties reported during the demolition operations of either area. An evaluation of medical logs of the units in the area did not show any increase in clinic visits or any reports of possible chemical exposure symptoms.

In our evaluation of the reported chemical detections from the NBC reconnaissance vehicle, the FOX vehicle, and the M256 kits, we looked for any reports of symptoms of acute exposures to chemical agents or reports of chemical casualties among the units in the vicinity of the reported detections—that is, not only at Kamisiyah, but all other sites during and after the war where FOX vehicle or M256 alarms went off.

Except for the incident of the blister agent exposure of Sergeant David Fisher, an Army scout who went into a bunker in southern Iraq during the war, we found none.

We then looked for any physical evidence that might indicate that chemical agent were present in the area of the detections. Again, we have found no evidence that would allow us to assess the validity of any of the reported detections. That is not to say that the detections are not valid, but simply that we have not been able to find corroborating evidence such as physical samples.

Since during the war there were no reported chemical casualities or symptoms of acute exposure apart from the Sergeant Fisher incident, and no physical evidence to substantiate that chemical agents were present, we then turned our attention to the question of

whether there might have been low—below detector-sensitivity—levels of chemical agents present.

To date, we have not been able to identify human or animal studies that have directly addressed the issue of short-term low-level nerve agent exposure followed by chronic symptoms or disease. The existing literature consistently indicated that in humans and animals receiving short-term exposure to agent levels which do not produce symptoms acutely, no long-term clinical effects are found.

Once learning of the probable presence of chemical agents at Kamisiyah, we initiated several steps concurrently to rapidly assess whether health-related consequence may have occurred among service members who demolished the bunker. With those steps underway, we expanded the geographic ring from the immediate vicinity of the bunker to a surrounding distance of five kilometers and then to 25 kilometers.

During this period, further information came to light indicating the detonation of chemical weapons in the pit at the Kamisiyah storage site. We initiated the same steps for the pit that were underway for the bunker. However, because of the nature of the detonation and the larger amount of munitions at the pit site, we are considering geographic rings of greater distances.

These are the steps, medically, that we've taken and that continue to be taken today. The demolition of the bunker itself—Bunker 73—involved approximately 150 individuals at that site. Our first step was to review the clinical records of service members from these involved units, who also had participated in the department's comprehensive clinical evaluation program.

We've now signficantly broadened our review efforts to include all members of the four units who were at Kamisiyah, plus others known to have been in the geographic rings of five and 25 kilometers of the bunker at the time of demolition. Similar reviews of clinical records of involved service members are underway for those who were within geographic rings surrounding the Kamisiyah pit. And when we receive the modeling of the pit exposure zone from the CIA, we will set those rings appropriately.

The second step was to contact individuals who were assigned to these units personally to inform them of the details we knew thus far, to obtain any other information regarding Kamisiyah that they may recall and to remind them of the availability of medical evaluations through the VA or DOD. This investigative efforts continues and thus far over 400 individuals have been contacted by telephone.

Next, we are conducting a review of information regarding DOD hospitalizations since the Persian Gulf War accumulated by the Naval Health Research Center to identify any unusual patterns involving members of those units. Our preliminary results from the first review reveal that there are no unusual hospitalizations.

Our next step was to conduct preliminary investigations of other sites where there may have been the potential for exposure of U.S. forces to chemical agents. Mr. McLaughlin has already spoken about the two sites destroyed from the air. We are now examining the reports of positive indicators from the FOX detection vehicles, the M–256's and the two Czech detections. These incidents number

26 in all, including 12 Fox detections, and 12 M–256 detections, and including the report from Al Jubayl.

We have established as a top priority and are funding as quickly as possible expedited peer review research concerning the subject of potential chronic effects caused from low-level exposures to chemical agents. We've already funded three research proposals for $2.5 million, and we're committed to funding another $2.5 million in the next months.

Finally, we have asked the Institute of Medicine, which oversaw our initial CCEP—Clinical Evaluation Program—to re-examine their review of our program to determine if, in the light of the Kamisiyah information, we should again evaluate these individuals or to conduct further tests—whether we should alter our protocol.

Mr. Chairman, I don't know whether you want me to take more time going back through the steps that we had taken before Kamisiyah. I have some very strong feelings about some of the comments that have been made about our clinical evaluation program, which began in May of 1994. We've extensively examined and cared for over 22,000 individuals, and that registry is on-going. But I will respond to your questions on that, perhaps, rather than take more time in my prepared statement.

Similarly, you will find in my prepared statement details on the department's senior oversight panel, the Persian Gulf investigation team formed in '94, our extensive declassification effort and the research portfolio of activities that we are conducting ourselves and in collaboration with the Veterans' Administration.

I also would leave for you to see in the prepared testimony how some of the lessons learned from this experience in the Gulf are now being built into our activities in other deployments, including Bosnia, so that we have a more effective pre- and post-deployment surveillance mechanism.

SSCI Chairman SPECTER. Thank——

Dr. JOSEPH. Mr. Chairman, I'll close, if I may. May I finish my closing statement?

SSCI Chairman SPECTER [continuing]. Thank you, Dr. Joseph. Your full statement and the addenda will be included in the record and I did not want to interrupt your testimony because there is a lot of explaining to do and I wanted to give you a full opportunity to do that. And you'll have further opportunity, I'm sure. There'll be some questions.

We now turn to Dr. Kenneth W. Kizer, who is the Under Secretary for Health of the Department of Veteran's Affairs, a very distinguished academic and professional record; honors graduate of Stanford University and the University of California; certified in five medical specialities; author of some 300 articles, books, chapters or other reports; extensive service in government, academia, philanthropy; served for six years as director of the California Department of Health Service.

The floor in yours, Dr. Kizer. To the extent that you can limit your opening comments to five minutes, we'd appreciate it. Time is going. We have quite a few Senators who want to question.

[The prepared statement of Mr. Kizer follows:]

STATEMENT OF KENNETH W. KIZER, M.D., M.P.H., UNDER SECRETARY FOR HEALTH, DEPARTMENT OF VETERANS AFFAIRS

Mr. Chairman and Members of the Committees, I appear before you today to update you on the Department of Veterans Affairs (VA) Persian Gulf War-related programs, with a specific focus on VA responses to the possibility, and now probability, of low-level exposure of American troops to chemical warfare nerve agents.

In the way of background let me reiterate a few points about VA's general response.

Shortly after returning from the Persian Gulf conflict in 1991, veterans began to report a variety of symptoms and illnesses. In response, the Department of Veterans Affairs developed the first of its several programs for these veterans. This was the Persian Gulf Veterans Registry health examination program. Ever since then, the Department has continuously tried to improve and expand its Persian Gulf War-related programs. Those programs now encompass a four-pronged approach that includes medical care, research, compensation, and outreach.

With regard to medical care, I would noted that VA provides Persian Gulf Registry Health Examinations, Referral Center evaluations, and readjustment and sexual trauma counseling, as well as outpatient and inpatient care under special eligibility provisions for Persian Gulf War veterans.

VA's position since the Registry's inception has been that all Persian Gulf War veterans should participate in the Registry program. To date, more than 60,000 veterans have completed Registry examinations. Almost 187,000 have been seen in VA ambulatory care clinics, and more than 18,200 have been hospitalized at VA medical facilities.

Persian Gulf veterans participating in the Registry examination have commonly reported a diverse array of symptoms, including fatigue, headache, muscle and joint pain, memory problems, shortness of breath, sleep disturbances, nausea, diarrhea and other gastrointestinal complaints, rashes, and chest pain. Of note, 12 percent of the Registry examinees have no health complaints but wish to participate in the examination to establish a baseline should they develop future health problems that might later be found to be due to their service in the Persian Gulf War.

I would reiterate again today that VA encourages all Persian Gulf War veterans, whether symptomatic or not, to avail themselves of the Registry examination program, especially if they are concerned about possible exposure to chemical warfare agents in light of DoD's recent announcements. Further, we would encourage persons who have been previously examined as part of the Registry program to request a follow up examination if they have symptoms or concerns.

VA has always remained open to the possibility that military personnel may have been exposed to a variety of hazardous agents, including chemical warfare agents, while serving in the Gulf War theater of operations.

In this regard, some Members of Congress have recently asked VA whether we listened to veterans who reported their belief that they had been exposed to chemical warfare agents during their Persian Gulf service. We did listen to those veterans. Illustrative of this, prior to the DoD announcement on June 21, 1996, VA designed its clinical uniform case assessment protocol to detect clinical signs and symptoms related to possible neurotoxic exposures. Neurologic examinations and cognitive testing have been part of the protocol from early on. As a result of this, VA diagnostic protocols and treatment programs do not need any substantial revision in light of DoD's recent disclosures about the release of sarin at Khamisiyah in March 1991.

Likewise, in response to a Reserve Construction Battalion unit of PGW veterans from Alabama, Tennessee, North Carolina, and Georgia reporting adverse health effects, which they believed were due to exposure to low-level chemical warfare agents, VA established a pilot medical assessment program at the Birmingham VA Medical Center to evaluate their health status. (As part of this special health care program, more than 100 veterans were evaluated. Included in this group were 55 veterans who complained of cognitive problems; these veterans underwent extensive (7–8 hours) neuropsychological testing and clinical evaluations. These evaluations did not reveal the pattern of neurologic abnormalities typically associated with neurotoxin exposure.) This pilot program evolved into VAMC Birmingham being designated a special referral center in June 1995.

A further demonstration of the fact that we were heeding what the veterans were saying can be found in the National Health Survey of Persian Gulf War Veterans where specific questions are asked about possible exposure to chemical warfare nerve toxins and mustard gas.

At this juncture, I believe it is very important to point out that there is no biomarker, laboratory finding or diagnostic test for chemical warfare agent nerve toxin

exposure. The diagnosis of conditions related to nerve toxins, whether they be chemical warfare agents, pesticides or hazardous industrial chemicals, is based on two things: first, known or presumed exposure to the chemical agent, and second, symptoms or physical signs consistent with the known biological effects of the chemical. Absent definite exposure data and/or typical symptoms and signs, it is essentially impossible to make a definitive diagnosis of chemical-related neurotoxicity. Furthermore, there is no curative therapy for the expected neurotoxic effects of these agents, although symptomatic treatments are available and represent the state-of-the-art at this time.

These same problems apply to conducting research in this area. Indeed one of the most challenging problems in conceptualizing and designing valid scientific studies of potential long-term effects of low level exposure to chemical warfare agents is knowing what exactly one should measure and study when there were no symptoms or signs of acute toxicity. It is clear in my mind that if we are going to adequately research these questions a major investment will be needed to develop both the physical plant capabilities and the intellectual capital that are required to conduct these very difficult studies.

The results of our Persian Gulf Registry health examination program are similar to those reported by other investigators, including scientists in England and Canada. In reviewing these data, it is important to recognize that numerous scientists and advisory committees have reviewed the medical data collected in these programs and have concluded that a wide variety of illnesses, including the whole range of well-defined medical and psychiatric conditions, are being diagnosed among PGW veterans. Furthermore, VA physicians have found that only a relatively small percentage of PGW veterans have unexplained illnesses and that no single, unique disease explains the range of the illnesses being diagnosed in Persian Gulf War veterans. That is, there is no Gulf War Syndrome in the strict medical sense of the term. In saying this, though, it is important to emphasize that VA does not at all doubt that many veterans reporting unexplained illnesses are suffering from real illness, and some are seriously ill, and that the inability to make definitive diagnoses is very frustrating for our physicians and other practitioners,as well as our veteran patients.

We continue to search for answers, and we continue to strive to expand our understanding of the illnesses of Persian Gulf veterans. And while scientific answers are being sought through research, VA will continue to provide needed healthcare and other services, including disability compensation, for those veterans suffering from either diagnosed or underdiagnosed illnesses.

With regard to research, I would remind you that the Registry and other similar examination program data are provided through medical records of self-selected individuals and, thus, may not be reflective of the entire population of Persian Gulf War veterans. In order to draw definitive conclusions about the health status of PGW veterans, a carefully designed and well-executed research program is necessary. VA has initiated such a research program.

VA's research program related to Persian Gulf veterans illnesses includes more than 30 individual projects being carried out by VA and university-affiliated investigators across the nation. And these projects are but part of the overall federal research effort.

VA established three Environmental Hazards Research Centers in 1994; all three centers are carrying out projects which address aspects of the potential adverse health outcomes of exposure to neurotoxins. In addition, VA's Environmental Epidemiology Service has completed a Persian Gulf Veterans Mortality Study and the first phase of the National Health Survey of Persian Gulf War Veterans and their Families. Details of these and other Government Federally sponsored research studies are included in the report, "Federally Sponsored Research on Persian Gulf Veterans Illnesses for 1995." Copies of this report have been provided to the Committees.

In May, VA announced that it would establish a fourth Environmental Hazards Research Center. This center will study adverse reproductive health effects that may be associated with military occupational exposures in the Persian Gulf, Vietnam and elsewhere. The proposals were due to VA's Research and Development Service on September 16, and awards will be made in the next two months.

I would take this opportunity to also give you a status report on the progress of two major epidemiological efforts.

The first is the Persian Gulf War Veterans Mortality Study. This study analyzes the specific causes of all deaths among the 696,562 Persian Gulf veterans who served in the theater of operations between August 1990 and April 1991, and a comparison group of 746,291 veterans who served elsewhere. The follow-up period for this study went through September 1993. The Persian Gulf Veterans Mortality Study has been completed and has been accepted for publication in a major sci-

entific journal. While the study demonstrates an excess in deaths in PGW veterans due to external causes, such as automobile accidents, it does not demonstrate differences in death rates due to medical conditions, including deaths due to cancer. The results of this, and other scientific studies taken together, suggest that PGW veterans as a group are not suffering from life-threatening medical conditions at rates higher than veterans who did not serve in Operations Desert Shield and Desert Storm.

The second study is the National Health Survey of Persian Gulf Veterans and their Families. This is being carried out by the VA's Environmental Epidemiology Service. Phase I, a postal survey of 15,000 Gulf War veterans and a comparison group of 15,000 Gulf era veterans, was completed in August. The questions on this survey asked veterans to report health complaints, medical conditions, and a wide variety of possible environmental exposures, including episodes of potential nerve gas, mustard gas, or biological warfare exposure. The response rate for Phase I of this survey was 57 percent. Phase II will consist of 8,000 telephone interviews and a review of 4,000 medical records. Phase II will address the potential for non-response bias, provide a more stable estimate of prevalence rates for various health outcomes, and verify self-reported health outcomes in medical records. The Phase III examination protocol is being finalized and examinations of veterans and their family members are expected to begin in Spring 1997. The protocol is being reviewed to determine if revisions are indicated based on our new knowledge of potential low-level chemical warfare agent exposures. Peer-review is being provided by a subcommittee of VA's Persian Gulf War Expert Scientific Advisory Committee. It is too early to discuss the results of this study as we have just begun our analysis of the Phase I results.

In January 1994, the Secretaries of VA, DoD, and HHS established the Persian Gulf Veterans Coordinating Board to provide interdepartmental coordination and direction of federal programs related to Persian Gulf War veterans. The Coordinating Board provides an interdepartmental means to share information on Persian Gulf War veterans health, to effectively allocate available resources, and to provide means of disseminating new research information. The Coordinating Board has three primary objectives:

To ensure that all veterans are provided the complete range of healthcare services necessary to take care of medical problems that may be related to deployment in Operations Desert Shield and Desert Storm;

To develop a research program that will result in the most accurate and complete understanding of the health problems experienced by PGW veterans and the factors that have contributed to these problems; and

To develop clear and consistent guidelines for the evaluation and compensation of disabilities related to Persian Gulf service.

VA plays a central role in the Persian Gulf Veterans Coordinating Board through its participation in the Clinical, Research, and Compensation and Benefits Working Groups. In particular, the research working group provides guidance and coordination for VA, DoD and HHS research activities related to Persian Gulf War veterans health. It coordinates all studies conducted or sponsored by these departments to prevent unnecessary duplication and to ensure that important gaps in scientific knowledge are identified and addressed. The working group is actively involved in directing resources toward high priority questions and monitoring the results of Federally-sponsored research projects. It has produced two reports: the "Report of Federal Research Activities Related to Persian Gulf Veterans Illnesses" and the 1995 document "A Working Plan for Research on Persian Gulf Veterans Illnesses." The 1996 update of the Working Plan was due to be released in September but will be delayed to allow incorporation of this new information.

One example of the Coordinating Board's proactive role in relevant research administration was its prioritization of the federal government and non-government research proposals submitted for funding to DoD's Broad Agency Announcement. The American Institute for Biological Science (AIBS) performed peer-review of the 111 proposals submitted. The research working group reviewed those proposals judged scientifically meritious by AIBS and prioritized them according to relevance and potential to fill research gaps in the existing Persian Gulf research portfolio. Twelve research projects encompassing the areas of reproductive outcomes, toxicology of pyridostigmine bromide, modeling of respiratory toxicant exposures from tent heaters, psychological outcomes, leishmaniasis, chronic fatigue, fibromyalgia, and neuromuscular function were given high priority for funding by the research working group.

Important to note is the fact that studies of low-level chemical warfare agent exposure were not given priority in the 1995 Working Plan or other research questions

because military and intelligence sources had repeatedly stated that there had been no use, presence, or evidence of exposure to chemical warfare agents. Based on those repeated assertions, combined with a lack of clear cut clinical evidence to support a finding of chemical warfare exposure, the Coordinating Board focused its research resources on other questions. This decision was supported by the Institute of Medicine, VA Persian Gulf Expert Scientific Committee, the National Institutes of Health Technology Assessment Workshop, and others.

When DoD made its recent announcement regarding possible exposure of U.S. troops to chemical warfare nerve agents at Khamisiyah the Coordinating Board immediately began revision of its action plan.

VA, through the Research Working Group of the Coordinating Board, has developed an action plan to address possible long-term health consequences of low-level exposure to chemical warfare toxins and mustard gas, based on the DOD's announcements regarding the demolition of a chemical munitions bunker and the destruction of a pit containing sarin and cyclosarin at Khamisiyah.

A recent literature review carried out by the Armed Forces Epidemiology Board, an advisory board of independent, non-government scientists, suggests that readily-identifiable, long-term adverse health effects due to nerve agent exposures only occur in human who show signs of acute toxicity or poisoning. That, is the available literature does not contain clear evidence that long-term, chronic adverse health effects result from exposures that do not produce acute clinical signs and symptoms. However, I should note that the research in this area is sparse and in VA's judgment it should not be construed to mean that clinically important adverse health effects cannot or definitely do not occur in the setting of low-level neurotoxin exposures. The Coordinating Board has recommended that more research resources be allocated to address this question. I strongly agree with this approach.

The DoD announcement regarding the demolitions at Khamisiyah has caused VA to reconsider and intensify its efforts related to possible effects of low-level exposures to chemical warfare agents. I have asked the Research Working Group of the Coordinating Board to provide a plan for addressing this issue as a component of the 1996 Working Plan for Research. As it now stands, the research working group has recommended a plan of action to: (1) fund toxicological research proposals on low-level chemical weapons exposure from a pool of already peer-reviewed proposals that had been submitted through a competitive process to the Army; (2) solicit research on the feasibility of conducting epidemiological investigations of low-level chemical agent effects; and (3) review the ability to confirm the identities and locations of individuals in and around Khamisiyah with the goal of soliciting, if appropriate, an epidemiological investigation.

Based on the Coordinating Board's recommendation, $2.5 million dollars has already been allocated to three new, peer-reviewed, basic science research projects in this area, and an additional $2.5 million dollar has been identified for future studies. Funding for these new efforts will come from the DoD/VA collaborative research program that is funded as part of DoD's appropriation.

While these efforts represent a good beginning, I have asked VA's Research and Development Service to take a completely fresh and broad look at these issues in light of the new information now provided by DoD. This includes asking them to develop a strategic plan for an environmental health research agenda that specifically focuses on low-level exposures to neurotoxins that might result from chemical warfare agents or other military situations. Likewise, we are in the process of organizing an international scientific symposium that bridges potential military and civilian incidents involving exposure to those types of chemicals. Given the relative lack of worldwide scientific capability for assessing these issues in the traditional open and peer-reviewed manner in which the best science is carried out, we believe it is essential to bring together a multi-disciplinary group of experts to focus on finding innovative solutions to these perplexing issues. In this regard, I would again stress that if we are going to adequately research these questions, a major investment of resources will be needed.

In conclusion, I would reiterate that research related to the illnesses of Persian Gulf War veterans is highly complex, and this is especially so for the investigation of concerns related to possible low-level exposure to chemical warfare agents. VA is committed to meeting these challenges and obtaining the most accurate answers we can concerning the health of PGW veterans and their families. In this regard we are grateful for the assistance provided by the Presidential Advisory Committee on Gulf War Veterans' Illnesses, particularly insofar as the Committee played a central role in bringing to light this new information about probable troop exposure to sarin and cyclosarin.

Thank you, Mr. Chairmen. That concludes my prepared testimony.

STATEMENT OF DR. KENNETH W. KIZER, UNDER SECRETARY FOR HEALTH, DEPARTMENT OF VETERANS AFFAIRS

Dr. KIZER. Thank you. Good morning, Mr. Chairman, Members of the Committee.

I'd like to take these few minutes for an opening statement to comment on the Department of Veterans' Affairs' Persian Gulf-related programs, focusing especially on VA's responses to the recent reports about the probable low-level exposure of American troops to chemical warfare agents. And I will do my best to keep within the five minutes that you noted.

SSCI Chairman SPECTER. Thank you.

Dr. KIZER. A number of Senators have already commented this morning about VA's multi-pronged effort to provide medical care, to conduct research, to provide compensation and to outreach to the Persian Gulf veterans. VA's position since the inception of the Persian Gulf Registry in 1991 has been that all Persian Gulf veterans should participate in the registry program. I would today again reiterate that VA encourages all Persian Gulf veterans, whether symptomatic or not, to avail themselves of the registry examination program, especially if they are concerned about possible exposure to chemical warfare agents in light of DOD's recent announcements. Further, we would encourage persons who have previously been examined as part of the registry program to request a follow-up examination if they have symptoms or concerns.

I'd also take this opportunity to underscore, as we have at a number of other forums, that the VA has always remained open to the possibility that military personnel may have been exposed to a variety of hazardous agents, including chemical warfare agents, while serving in the Gulf War theater of operations. In this regard, I would note that a number of Members of Congress have recently asked whether the VA listened to the veterans who reported their belief that they had been exposed to chemical agents during the Persian Gulf service, and I would affirm, as we have, that we did listen to those veterans. Illustrative of this prior to DOD's announcement at the end of June this year, VA had designed a clinical uniform case assessment protocol to detect clinical signs and symptoms related to possible neurotoxic exposures, and neurologic examinations and cognitive testing have been part of the protocol from early on.

I would also add, as an aside, that as a result of this, the VA's diagnostic protocols and treatment programs do not need any substantial revision in light of DOD's recent disclosures, although we are taking another look at this.

Just a couple of other things I might note in this regard—when the reserve construction battalion unit of Persian Gulf veterans from Alabama, Tennessee, North Carolina and Georgia reported adverse health effects that they believed were due to low-level chemical warfare agents, we established a pilot medical assessment program at the Birmingham VA Medical Center to evaluate their health status. That was subsequently turned into a major referral center.

Further, as evidence that we were heeding what the veterans themselves were saying is that in the National Health Survey of Persian Gulf veterans, which Senator Simpson commented about

this morning, specific questions are asked about possible exposure to chemical warfare nerve toxins, as well as mustard gas.

At this point, I think it is very important to point out a couple of things. There is no biomarker, laboratory finding or diagnostic test that can be conducted for chemical warfare agent nerve toxin exposure. The diagnosis of conditions related to nerve toxins, whether they occur as a result of chemical warfare agents, whether they occur as a result of agricultural pesticides, or whether they occur as a result of hazardous industrial chemicals, is based on two things. First, the known or presumed exposure to the chemical agent, and second, symptoms or physical signs consistent with the known biological effects of the chemical. Absent definite exposure data or typical signs and symptoms, it is essentially impossible to make a definitive diagnosis of chemical related neurotoxicity.

These same problems apply to conducting research in this area. Indeed, one of the most challenging problems that we have in conceptualizing and designing valid scientific studies of potential long term effects of low level exposure to chemical warfare agents is knowing what exactly one should measure and study when there were no signs or symptoms. It's very clear in my mind that if we're going to adequately research these questions, a major investment will be required to develop both the physical plant capabilities and the intellectual capital that are required to conduct these very difficult studies.

Now, in the interest of time let me move forward to make a few comments about the research programs that are underway. Again, Members have already commented about the number of studies being conducted by VA and other agencies. I think it is important to note at this junction that studies of low level chemical warfare agent exposure were not given as high priority as other research areas in the previous working plans of Persian Gulf veteran illnesses because military and intelligence sources had repeatedly stated that there was no use, presence or evidence of chemical exposure, or of exposure to chemical warfare agents. Those repeated assertions, combined with a lack of clear cut clinical evidence to support a finding of chemical warfare agent exposure, resulted in the Persian Gulf Veteran Coordinating Board focusing its research resources on other questions. And that decision was supported by the Institute of Medicine, the VA Persian Gulf Expert Scientific Committee, the National Institute of Health Technology Assessment Workshop and others.

As a result of the recent announcements regarding probable exposure at Kamisiyah, the Coordinating Board immediately began a revision of its plan. The VA, through the Research Working Group of the Coordinating Board, has developed an action plan to address possible long-term health consequences of low-level exposure to these chemical warfare nerve toxins and mustard gas based on the new information.

And let me just state again, in the interest of time, that Dr. Joseph, I think, has commented about the conventional medical thinking today that long-term adverse health affects due to nerve agent exposure only occur in humans who show signs of acute toxicity. However, I would caution that the research in this area is very sparse and that in VA's judgment it should not be construed

to mean that clinically important adverse health affects cannot or do not occur in the setting of short-term, low-level exposures, especially, if it's combined with other environmental stressors. The Coordinating Board has recommended more research be done in this regard, and I strongly support that approach.

Just a few other details in this regard. The Research Working Group has moved forward on a plan—to pursue action in this regard. As it now stands, the Research Working Group has recommended funding three toxicologic research proposals on low-level chemical weapons exposure from a pool of already peer-reviewed proposals that have been submitted through a competitive process. They're going to solicit research on the feasibility of conducting epidemiologic investigations of low-level chemical agents, and likewise, review the ability to confirm the identities and locations of individuals in and around Kamisiyah with the goal of soliciting further epidemiologic investigation if it's appropriate.

And while these things represent a good beginning, I've asked VA's Research and Development Service to take a completely fresh and broad look at these issues in light of the new information now provided by DOD. This includes asking them to develop a strategic plan for an environmental health research agenda that specifically focuses on low-level exposures to neurotoxins that might result from chemical warfare agents or other military situations. Likewise, we're in the process of organizing an international scientific symposium that bridges potential military and civilian incidents involving exposure to these type of chemicals. Given the relative lack of worldwide scientific capability for assessing these issues in the traditional open and peer reviewed manner in which the best science is conducted, we believe that it's essential to bring together a multi-disciplinary group of experts to focus on finding innovative ways to solve these perplexing problems.

In this regard, I would again stress that if we're going to adequately research these questions, a major investment of resources will be needed.

Let me just conclude these comments by reiterating that the VA is committed to meeting these challenges and obtaining the most accurate answers we can concerning the health of our Persian Gulf veterans and their families. In this regard, we are grateful for the assistance provided by Congress, as well as, certainly, the White House, especially as manifested through the Presidential Advisory Commission on Persian Gulf War Veterans Illnesses and the very central role they have played in bringing this new information about probable troop exposure to light.

With that let me stop and thank you for this opportunity to make these comments.

SSCI Chairman SPECTER. Thank you very much, Dr. Kizer.

Dr. Joseph, I begin the first question with you. We have the destruction of a chemical weapons site in March of 1991. In October of 1991, you have an identification, clear cut, of its being a chemical weapons site. You have the deputy director of defense saying, today, quote, "At this time, we do not know if U.S. troops were exposed to toxic chemicals during these events." Isn't the Department of Defense, really, AWOL and derelict in not facing up to the Department of Defense's responsibility in this matter as of today?

Dr. JOSEPH. I don't believe the Department is AWOL or derelict, Mr. Chairman. I think, as I read the Deputy Secretary of Defense's words this morning, he uses them in the same sense that Senator Simpson did. We do not know. I think everyone has said—the Department has said—since Mr. Bacon, a spokesman, on June 21st was the Kamisiyah announcement—that we think now that it is highly probable or plausible that there was an exposure to agent by that demolition team.

Whether we know that yet or not, I think, is another story. And particularly, whether we know that yet or not in the sense of a level of exposure to toxic substance that might be thought to have health effects.

SSCI Chairman SPECTER. Well, Dr. Joseph I have to disagree with you when you say plausible or highly probable. How much time is it going to take to have an assessment as to the responsibility of the Department of Defense? You have Dr. Kizer's reference to the Presidential advisory commission. The investigators for that advisory commission said that the credibility of the Defense Department had been gravely undermined by its activities here. Do you disagree with that?

Dr. JOSEPH. Well, we'll see what the commission, itself, says.

In fact, Mr. Chairman, as I think ought to be clear from Mr. McLaughlin's testimony and mine, it was the rediscovery by the CIA and the DOD in light of the UNSCOM May '96 report that surfaced Kamisiyah. Kamisiyah is an important watershed incident. We don't disagree with that at all. But it was the CIA and DOD in light of the May '96 UNSCOM report that resurfaced Kamisiyah. And in fact, it was the DOD who announced that finding, not the Presidential advisory committee.

SSCI Chairman SPECTER. Well, why do we need a rediscovery and a redefinition, when you have an October 1991 determination that Kamisiyah was a chemical weapons site? And you have an elaborate sequence to find—described by the CIA, here in testimony today, all of which you knew about long ago, so that you have what really amounts to stonewalling, not to use excessive pejoratives—pretty hard to find an excessive pejorative, really—with the Secretary, the Deputy Secretary of Defense saying that we do not know if U.S. troops were exposed to toxic chemicals during those events. I mean, isn't conclusive, definite, established, proved, that U.S. troops were exposed to toxic chemicals?

Dr. JOSEPH. I'd like to give an answer in two parts to that, Senator.

First, I think——

SSCI Chairman SPECTER. Were either of those parts yes or no?

Dr. JOSEPH. Yes, they are.

SSCI Chairman SPECTER. Okay.

Dr. JOSEPH. The answer to the first part is no, that I don't believe the Department is stonewalling. I think it's amply demonstrated in my testimony that we are treating Kamisiyah pit, Kamisiyah bunker, the other FOX and 256 detections and the Czech detections as instances of probable exposure. And that we are treating them from the investigational side and the medical side as if these are incidents of exposure.

SSCI Chairman SPECTER. Well, you talk about as if, and you talk about probabilities, but your conclusion is from your treatment, that U.S. troops were exposed to toxic chemicals during those events. That's what you're saying. You're treating them——

Dr. JOSEPH. As if they were. Yes, sir.

SSCI Chairman SPECTER. As if.

Dr. JOSEPH. Yes, sir.

SSCI Chairman SPECTER. Well, the conclusion is that they were exposed, because that's why you're treating them. I mean, what's the point, Dr. Joseph, in the business as if? You have the testimony of Dr. Kizer, which you don't have to be credentialed, as you men are—extraordinarily so—that a diagnosis of nerve toxins depends on base of exposure and symptoms. And you have both of those factors there. And you're treating them.

So isn't it really a pretty common sense conclusion that the U.S. troops were exposed to toxic chemicals during those events?

Dr. JOSEPH. Mr. Chairman, you've made—I think there's one error of logic in the statement you've just made. We do not have evidence of symptoms at the time of demolition. As Dr. Kizer said, and I said in my testimony, the current scientific knowledge—imperfect as it may be—and I totally agree with what he said, and what I said about our need to get on and improve that knowledge—is that in the absence of acute symptoms to low-level exposure, the current scientific opinion is that there are not chronic symptoms. What we have is a high probability, plausibility of exposure, no understanding of acute symptoms at the time, now symptoms later—chronically later, several years later—and the question remains, are those symptoms related to that probable exposure at low level five years earlier? And I would submit that we do not know the answer to that question, and we are doing everything we can to find out.

SSCI Chairman SPECTER. Well, my time is up. And I shall not ask any more questions, but I do conclude by saying that you are treating as if, but that to me sounds like legalese for accepting the responsibility. And that the essence of what you're saying is that you're treating because these troops were exposed to toxic chemicals during those events. And when you talk about not contemporaneously knowing that the symptoms existed, you weren't there to inspect them contemporaneously with the event to see what the symptoms were, and there has to be an inference made after the fact. And it seems to me that five years after the event, that the Department of Defense and you, Dr. Joseph, would be well advised and certainly the Deputy Secretary not to say we do not know if U.S. troops were exposed on this face of the record.

Senator Simpson.

Veterans' Chairman SIMPSON. Thank you, Mr. Chairman, my fellow chairman.

I was in the Army. I was never in combat, very few of us were. I think the figure is of the 26 million of us who are veterans, perhaps 3 million of us were exposed to combat or even in a combat theater. As I wind down 18 years of this work, I find that the most vigorous activity comes from frustration, irritation, impatience and anxiety, because it takes time to get medical and scientific answers. Time is not what anybody wants. They want immediacy.

And I think everything in America is based on immediacy. Right now. Gratification. You name it. We want it now, whether it's consumer goods or other things. This is a tough issue.

I do remember the training that we were exposed to certain placebos and fake gases—and we were supposed to respond. Sometimes that was to perform a self-inoculation with a little syringe crammed into your calves. There were guys who said even if they smelled the stuff, they wouldn't do that, because they were fearful of sticking a needle in themselves. It was interesting stuff as I watched all that.

I do know enough about nerve gas, at least through my training many years ago at Fort Benning and in Germany, that if somebody were exposed to that stuff, there is an immediate symptom. It's called death. Is that not correct?

Dr. JOSEPH. There are degrees of symptoms, but——

Veterans' Chairman SIMPSON. I know, but one of them is——

Dr. JOSEPH. Yes, sir.

Veterans' Chairman SIMPSON. And then there is suffocation, and there is respiratory failure, there is congest—there are many things when somebody gets a whiff of that stuff. Is that not correct?

Dr. JOSEPH. That is correct, Mr. Chairman, and that's why we went back and looked at the unit medical logs and reports—looked for any reports of acute symptoms, illness or death in the areas of the demolition. And as I said in my testimony, we have not found them.

Veterans' Chairman SIMPSON. And there were about 150 of these men on the ground—or what was that figure—that were part of the detonation team?

Dr. JOSEPH. Well, Senator Simpson, I think that's part of the confusion here, what the number is. What I tried to do in my testimony is talk about how many were at which distance from which demolition. You are correct in terms of the actual site of the demolition, of the bunker, sir.

Veterans' Chairman SIMPSON. Well, obviously we would all know medically and scientifically that high-level exposure would have been dramatic and hideous. Low-level exposure less so, but how less so? But what we do know is that no one at the site while doing that work expressed any discomfiture. Is that where we are?

Dr. JOSEPH. That is the best information we have.

Veterans' Chairman SIMPSON. That is what we know.

Dr. JOSEPH. That is what we know.

Veterans' Chairman SIMPSON. And those are interviews of those people, is that not correct?

Dr. JOSEPH. That's correct.

Veterans' Chairman SIMPSON. Personal interviews?

Dr. JOSEPH. Personal interviews, and going back, looking at the medical logs, talking to the battalion commander and the company commanders, yes, sir.

Veterans' Chairman SIMPSON. Okay. I heard that. You named two or three company commanders in the battalion. After the mission was completed and the detonation and the bunker savagery was done, no one in that unit complained of any effects at all that would indicate anything. Is that correct?

Dr. JOSEPH. That is correct.

Veterans' Chairman SIMPSON. Were there any chemical detectors? It seems like a unit like that would have one on every—one on every shoulder. One on their belly, one on their ear. What did they have with regard to chemical detectors?

Dr. JOSEPH. In my testimony, in my prepared testimony, Senator, I go to some detail about the issue of what detectors were at the Kamisiyah bunker and pit sites and what occasioned. Initially, the information we had that there were no positive detections, there have been some changes of story. One, for example, one person now says that his M–256 kit was positive—was weakly positive.

Veterans' Chairman SIMPSON. Describe what each of these men carried because they knew that they were in an area of possible nerve gas and other agent presence.

Dr. JOSEPH. I want to preface that by saying that, of course, it's not all one activity and one group of people.

Veterans' Chairman SIMPSON. I understand.

Dr. JOSEPH. The initial entry into the bunker site—let me speak about the bunker site. The initial entry into the bunker site included the activity of NBC—nuclear, biological, chemical—personnel who were to look for any evidence of weapons of mass destruction. As Mr. McLaughlin has said in his testimony, on that initial bunker investigation they did not see any. They, of course, would have with them both the first level M1A1, sort of least effective, or most sensitive and least specific, warning kit. Then they would be followed by the EOD, the demolitions team itself, who would go in and who would have with them that kit plus the M256, which is a more specific kit. We did not have FOX vehicles in that area.

Now, there is a question as to whether there was—I believe there was one M1A1 alarm that went off. And in response to that, depending on who you talked to who was there that day, some of the members of the 37th did put on their protective gear, some did not put on their protective gear. We don't have a verification about a second-level detector that would confirm the first. And in all that we know, when the actual explosion occurred, the members of the 37th who had been at the site, laid the charges, had moved off about three kilometers or three miles from the site. And they were not in protective gear. There is a videotape that you may have seen that shows them not in protective gear.

Veterans' Chairman SIMPSON. Well, my time has expired. But when it was all finished, everything you have said just now you've stated before——

Dr. JOSEPH. Yes. I believe——

Veterans' Chairman SIMPSON [continuing]. Somewhere?

Dr. JOSEPH. Yes. I believe that's been said before.

Veterans' Chairman SIMPSON. I mean, how many——

Dr. JOSEPH. Not in this detail, but——

Veterans' Chairman SIMPSON. How many years ago, or how many months ago, did you first say these things?

Dr. JOSEPH. Well, this was not in our awareness until June of this year.

Veterans' Chairman SIMPSON. That's right. It could not have been, could it?

Dr. JOSEPH. I believe it——well, whether it could not have been is a difficult question to ask. And I don't know whether this is the point you want me to go back into what happened in all those instances. I'd be happy to do it as the reports came in. But it was not; it was not in the Department's awareness, nor in the CIA's awareness until it came together in June of this year. And we announced it.

Veterans' Chairman SIMPSON. Because you might have had a lot of trouble believing the Iraqis at that time was another reason back then.

Dr. JOSEPH. Questions about whether the Iraqis were telling the truth, issues about different channels intelligence and medical—different perspective on what we were looking for back in '91, et cetera.

Veterans' Chairman SIMPSON. I know one thing. My predecessors here took care of my veterans and my successors will take care of the veterans. That's what I know about the United States of America and that's what I know about the Veterans' Affairs Committee that has endured all sorts of Administrations and all sorts of leadership. That includes my partner to my right and my partner to my left. One of them will take it over. Al Cranston, Strom Thurmond, Frank Murkowski and others down through the years have taken care of our veterans.

SSCI Chairman SPECTER. And Alan Simpson.

Veterans' Chairman SIMPSON. Yes, we'll I've done a little of that too, although I get tangled up with them sometimes.

Thank you.

SSCI Chairman SPECTER. Thank you very much, Mr. Chairman. Senator Kerrey.

SSCI Vice Chairman KERREY. Thank you, Mr. Chairman.

Dr. Joseph and Mr. McLaughlin and Dr. Kizer, I appreciate very much your testimony, particularly the written testimony, there is a lot of detail in there. And as I—Dr. Joseph, your closing two paragraphs I think are more important to note. Particularly, the last one where you say that regardless of how we unravel all of this and how we assess blame or not blame, how we figure it all out, that the program that this Administration has established out of nothing will provide us with a basis for evaluating, first of all, health status of troops prior to deployment. Secondly, an evaluation of health risks in a deployment area. And thirdly, evaluate the health status coming out of a deployment. Is that not correct? I mean, do you see this program as having been, you know, been started by the President as an effort to get to the bottom and determine whether or not there is a connection between observed health problems, very real observed health problems, and deployment itself? Coming out of that evaluation, though, you see something as being produced that will be useful for future deployment.

Dr. JOSEPH. Well, I certainly believe that. I think it is an unprecedented effort that's been made. But I would not want to leave the impression at all that we do not see Kamisiyah as an important watershed change. Kamisiyah is a major change in the way we understand what may have happened in the Gulf, what happened in the Gulf and what the possibility consequences may have been. Prior to Kamisiyah, we had a number of Gulf War veterans who

were ill and we sought explanations for those illnesses. Now we have evidence of possible, I would say plausible, chemical warfare agent exposures and we have to go back and look at all that clinical and other work we've done in light of those new disclosures and in light of that new understanding. And I think that's what Secretary White is attempting to say in his letter to Senator Thurmond, whatever the choice of specific words.

SSCI Vice Chairman KERREY. well, Mr. McLaughlin, it seems to me that as I look at the events on the 2nd through the 10th of March and maybe, Dr. Joseph, your detailed evaluation of that or description of that moment in your testimony could cause you to comment on it as well. But it seems like the 37th Engineers who went in there, along with a unit of EOD people—I don't know about them—both of which were attached to the 82nd Airborne, is that correct?

Dr. JOSEPH. In support of, yes.

SSCI Vice Chairman KERREY. They were in support of the 82nd Airborne. It looks, given all of the open statements that were made about the Iraqis with chemical and biological weapons, it looks like a pretty sloppy operation. I mean, my God, they, A, they didn't take enough charge in there to blow up all the weapons. They left weapons undestroyed. B, from the description that I got, that they set the charge and they had rocket fragments falling all around them. And C, it doesn't seem to me that they went in there with the proper amount of attention being given, the possibility, in any of these bunkers that the unmarked rockets—in this case a 122-millimeter rockets—and I don't know how much sarin there is in that weapon, but I presume that it's a sufficient amount of sarin that if it were to come down and detonate on one of these individuals who were blowing it, it could have produced the symptom that Senator Simpson was describing, which is death.

Did we have intelligence that indicated that these, contrary to the public statements at the time, which were that the Iraqi weapons were marked—did we have intelligence at the time to provide our troops that the Iraqi sarin and mustard weapons were not marked?

Mr. MCLAUGHLIN. We did not know at the time that these weapons were at Kamisiyah, but we had issued a bulletin saying that for the benefit of all inspectors and troops who were associated with CENTCOM, that there was a danger of encountering unmarked chemical weapons from Iraq. So that bulletin was out there.

SSCI Vice Chairman KERREY. Mr. McLaughlin, a 122 millimeter rocket would come to your shoulder, right?

Mr. MCLAUGHLIN. Right.

SSCI Vice Chairman KERREY. And the business end would be about like this? And again, I don't know how much sarin is inside of that thing.

Mr. MCLAUGHLIN. About eight kilograms.

SSCI Vice Chairman KERREY. How much?

Mr. MCLAUGHLIN. Eight kilograms.

SSCI Vice Chairman KERREY. Eight kilograms, which is a little shy of four pounds of sarin. How much—you know, if I set off four

pounds of sarin inside this room would it kill everybody in the room?

Mr. MCLAUGHLIN. Kill everybody in a much larger radius than this room.

SSCI Vice Chairman KERREY. So I'm dealing with a—pardon me? Eight kilograms is four pounds?

Mr. MCLAUGHLIN. No, 20.

SSCI Vice Chairman KERREY. 20 pounds?

Mr. MCLAUGHLIN. 2.2.

SSCI Vice Chairman KERREY. Yes, 8 times 2.2. Okay, sorry. I flunked another test. I can spell potato, though.

[General laughter.]

SSCI Vice Chairman KERREY. It seems to me, though, you've got a substantial risk to these troops. I mean, if 20 pounds of sarin will kill everybody in this room and then some, and you're saying, Mr. McLaughlin, that the intell at the time was that they were unmarked——

Mr. MCLAUGHLIN. Yes, that's correct.

SSCI Vice Chairman KERREY. It seems to me that the 37th engineer and the EOD people that accompanied them were given pretty bad order. Somebody sitting up at the top of the food chain must not have assessed this thing correctly. They put them—they put those troops at substantial risk, did they not?

Mr. MCLAUGHLIN. Senator Kerrey——

SSCI Vice Chairman KERREY. I mean, let's say that's Bunker 73 sitting over there right now. Knowing what we know about what was in those warheads, how would you feel about going over and lashing up some charges to them and walking back about 100 meters and kind of hunkering down? Which is basically what I understand they did. And, you know, fire in the hole and let it go. All of a sudden I've got, you know, falling out of the sky—geez, I've got fragments falling on me. How would you feel about going out there today? Wouldn't you say that give the risk that that was an inadvisable operation?

Dr. JOSEPH. Well, Senator Kerrey, I think you would understand more than most how much was going on in the area at the time. One of the senior Army leaders who was there described to me blowing one ammunition depot that was the size of the Washington mall with hundreds of ammunition bunkers in it. And that was only one among I don't know how many ammunition depots that were blown.

SSCI Vice Chairman KERREY. If you don't mind just stopping right there, I mean, now you've sized the thing pretty impressively.

Mr. MCLAUGHLIN. This is a different site, sir.

SSCI Vice Chairman KERREY. I understand, but that site you just described could have been 100% sarin, could it not, Mr. McLaughlin? That entire site could have been 100 percent sarin.

Mr. MCLAUGHLIN. Theoretically, but we do—from what we know of chemical weapons in the Kuwait theater of operations, we were only aware of chemical weapons stored at these two facilities that we've documented here—Kamisiyah and the other.

SSCI Vice Chairman KERREY. Thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you very much, Senator Kerrey.

Senator Rockefeller?

Veterans' Ranking Member ROCKEFELLER. Mr. Chairman, I have actually about seven questions that I would really like to have answered. I'll probably only have a chance to ask one or two in the first round.

SSCI Chairman SPECTER. Go ahead.

Veterans' Ranking Member ROCKEFELLER. Will there be a second round?

SSCI Chairman SPECTER. Take what time you need.

Veterans' Ranking Member ROCKEFELLER. Okay. Thank you sir.

Dr. Joseph, I'm particularly interested in your statement that the DOD didn't pay too much attention to the early reports of chemical exposures because you questioned, quote, "How could you possibly have known that the soldiers would come home with these illnesses?" close quote. To me, that's an amazing statement. You're basically saying it's okay that somebody ignored reports of chemical releases because we didn't have any soldiers who were sick from them yet.

It seems to me that the job of the person in your office is to anticipate these very issues, based on the best available evidence. So, let's just look at what we did know for a second.

We did know that chemical nerve agents were in the Gulf.

We did know, or strongly suspect, that Saddam Hussein had used nerve agents against his own people.

We did know that DOD was prescribing an experimental drug, pyridostigmine bromide, PB, itself a nerve agent, for use by our soldiers, and as it turns out, for the most part without their consent.

We did know that DOD's own research suggested that PB might effective for use against soman but not against sarin. We knew that. You know that.

Dr. JOSEPH. Not me, sir. We're talking about 1991. We knew that.

Veterans' Ranking Member ROCKEFELLER. All right, you didn't know it. Well——

Dr. JOSEPH. We knew it in 1991, Senator.

Veterans' Ranking Member ROCKEFELLER. Sarin was the very nerve agent that we knew Saddam had because we and our allies had, in fact, supplied them in an earlier time.

We did know that our soldiers would face horrible conditions in the Gulf, including a lot of insects. As you described, there was a lot going on. That doesn't mean that the safety of the troops, the health of the troops, becomes less important. We did know that DOD was likely to make extensive use of insecticides and repellants in the Gulf.

So. Dr. Joseph, knowing just these things, don't you think that you would have wanted the Department of Defense to have at least a heightened awareness of possible chemical exposures? To be looking for these reports? To be assuming—leaning over to assume—that they might be true and therefore there should be heightened activity just based upon what we did know?

And wouldn't we want our soldiers to assume that bombings and demolitions of Iraq's weaponry during and after the war, that maybe, just maybe, would result in some toxic releases? Wouldn't that have been a pretty good operating assumption?

Dr. JOSEPH. Well, with regard to the first part of you comment, Senator, that we, the department thought it was okay because we didn't know, I mean, I would take very strong exception to that.

With regard to the substance of your comments, I would remind you that this was in 1991. There was, as I understand it, historic—this, of course, is a different time, different people, different Administration, and there was at that time extreme thought given to all factors that you have described. I'm sure that was so.

I also know historically that in 1991, as both Mr. McLaughlin and I have said, that that initial UNSCOM message came in in a different channel. It came in through the intelligence channel, that it was not correlated medically. I am not saying whether that was right or wrong or the best thing. You know, I'm not justifying that decision. What I'm trying to do is to describe to you today what happened in 1991 with the first information that came in. It did not come only to the Department of Defense. That initial UNSCOM report was widespread in the intelligence and national security apparatus. And it was not placed in it's—I agree with you—proper and relevant context as to its medical significance. That is what I'm saying that happened in 1991.

Veterans' Ranking Member ROCKEFELLER. And that it was not properly placed? I'll—well, let me go ahead.

Dr. JOSEPH. And it submerged, if I may, it submerged in the avalanche of material or the flood of material that was coming in at that time.

Veterans' Ranking Member ROCKEFELLER. No excuse.

Dr. JOSEPH. I don't believe excuse, either.

Veterans' Ranking Member ROCKEFELLER. No excuse whatsoever.

Dr. JOSEPH. I'm not making an excuse, Senator. I'm telling you what we believed happened in 1991.

Veterans' Ranking Member ROCKEFELLER. And there's been a long time since 1991. Reference was made by the Chairman earlier to this letter coming from the Deputy Secretary on the day that we're having a hearing. It's little bit like the way news of the blow-up of the deposits of weaponry came about—the Defense Department announcement was a hastily called press release about 24 hours after the White House, I believe, had said that they were going to come out with it. So you can deny that if you want.

Dr. JOSEPH. I believe it. May I answer?

SSCI Chairman SPECTER. You may answer, Dr. Joseph.

Dr. JOSEPH. I believe that both Mr. McLaughlin and I have laid out to you to the best of our ability, what the sequence of events of awareness of the various UNSCOM inspections and the U.S. military and intelligence establishments' knowledge of those announcements were. We're not doing that, I'm not doing that as an excuse for what has happened. We're trying to lay out what we believed happened. And I think the record does show that as soon as we had awareness of the existence and significance of this event in Kamisiyah—that's the whole point of the end of my—this is a war—we then made that public.

Veterans' Ranking Member ROCKEFELLER. Yes, and in the letter from the Deputy Secretary, he talks about DOD-sponsored research into possible effects of low-level chemical exposure that will be

funded for a total of $5 million. I'm not even sure of this, but I'll bet that's the $5 million that Bob Byrd put in for the purpose of having you all do that.

Now, I'm very interested in the work of your Persian Gulf Illnesses' Investigation Team. That's the investigation team that reports directly to you, am I right?

Dr. JOSEPH. It reports to me, yes.

Veterans' Ranking Member ROCKEFELLER. I think it was just last month that this DOD investigation team issued a report on low-level nerve agent exposure, subject to some discussion this morning. The DOD report concludes that there is no credible evidence for chronic illnesses caused by exposures to nerve agents at low levels in the absence of acute illness or exposure, and that such a process cannot be reasonably advanced. It says that research in this area is unlikely, in the extreme, to enhance our understanding of Gulf War illnesses. Do you agree with that, or do you reject that report and request further work?

Dr. JOSEPH. Well, I asked for that report and at the same time, I asked the Armed Forces Epidemiology Board, a distinguished group of experts who've been serving the department as a board since 1941, to undertake a review of the world literature and to give us a recommendation or a finding on the same topic. They came to essentially the same conclusion. I'd be happy to provide you that report as well, sir.

Veterans' Ranking Member ROCKEFELLER. So, is this a possibility, Dr. Joseph, that you believe we should explore? do you think there is a reasonable medical possibility that low-level exposure can cause long-term effects?

Dr. JOSEPH. I think——

Veterans' Ranking Member ROCKEFELLER. Even where——

Dr. JOSEPH. Excuse me, sir.

Veterans' Ranking Member ROCKEFELLER [continuing]. There has been no acute illness or exposure?

Dr. JOSEPH. I think both Dr. Kizer and I spoke directly to that point. The current overwhelming base of medical opinion and knowledge is that that is not so. Both of us have said and both of us believe that that knowledge base is not adequate and that we need to look further into that issue. Yes, sir, to your question.

SSCI Chairman SPECTER. Senator Rockefeller, if you want to pursue this line, go ahead.

Veterans' Ranking Member ROCKEFELLER. I have one more question, if possible.

SSCI Chairman SPECTER. No, no, go ahead. I just—if you have a great deal more, I think we ought to yield to some of the other members, but if you have another question on this line, proceed.

Veterans' Ranking Member ROCKEFELLER. If it's all right, I'd like to ask one more——

SSCI Chairman SPECTER. Go ahead.

Veterans' Ranking Member ROCKEFELLER [continuing]. On this one.

I organized a briefing this past May to which DOD did, in fact, send somebody to, and we heard a presentation by Dr. Abou-Donia from Duke University, which very much confirmed earlier work done by a courageous scientists by the name of Dr. Jim Moss. Dr.

Abou-Donia told us about the very likely multiple effects—synergism—of exposure to pyridostigmine bromide, DEET and permythrin, an effect which I know you do not support. But I understand that the department has provided sarin to Dr. Abou-Donia's lab to study its effect in combination with DEET and pyridostigmine.

Now, Dr. Abou-Donia warned my staff that his findings are not complete and have not yet been peer reviewed. do you want to tell us what his preliminary findings are?

Dr. JOSEPH. I would say first that you and I can argue to great length the merits of the Abou-Donia or the Moss research, but in my business, Dr. Kizer's business, we do not regard research as having validity until it is peer reviewed and published. In both cases, this has not been the case. I could get into you—I probably need to refresh my recollection about the various things about the particular research on chickens that Dr. Abou-Donia has done or the research on cockroaches that Dr. Moss has done, and to why we think there is real open question about whether that research points with any relevance to possible human effects. But the proof of that pudding will be in peer review and publication.

Veterans' Ranking Member ROCKEFELLER. What he reported to us just yesterday I thought was interesting. First, he said sarin causes inaction of certain enzymes in animals, and in most cases, this is reversible, and recovery from sarin exposure is complete. That is consistent with your reviews, I would expect?

Dr. JOSEPH. It is and, of course, it's one of the bases for thinking—for the scientific opinion that exists that without acute effects, you do not have long-term chronic effects.

Veterans' Ranking Member ROCKEFELLER. But what he also told us that when very low doses of sarin are given in combination with pyridostigmine and DEET, the enzymes do not recover—this is his quote—"the enzymes do not recover, and we believe the damage is irreversible," close quote.

Of what significance would these findings be if they do, in fact, meet the standards of peer review?

Dr. JOSEPH. Well, with all due respect, Senator, whatever Dr. Abou-Donia did or did not tell you in private conversation yesterday, without seeing any of the data, without having any knowledge of how it fits into a peer-review structure, I really couldn't comment on that. I don't know what it means. It means—in fact, it means very little to me. It could, in the long event turn out to have some significance, but you've shown me no basis for thinking that that's so in this discussion.

Veterans' Ranking Member ROCKEFELLER. And I've asked that he send the preliminary report to your attention, and I'll be interested in your reaction.

Dr. JOSEPH. May I, if I may just prolong my answer because I think it's important here. You yourself mentioned that we have continued to fund his research. I think that is evidence that what we're far from are trying to close off these avenues of inquiry and research, we are interested in pursuing them wherever they will lead. But to know what we have got once we pursue them, that has to be done in the proper way, and as has been said, it takes time.

Veterans' Ranking Member ROCKEFELLER. So you have a wonderful advantage, because you and others are able to say, well, until it's peer reviewed, until it's absolutely in its final form, I really don't know how I could comment on it. In other words, anything which comes up, you can push aside because you say, well, there's no scientific evidence.

Now I happen to have been around this country and in my own state, and I happen to have seen an awful lot of people—hundreds—who are suffering illnesses that I've never seen before, and symptoms I've never seen before. You've got the gift and the luck of being able to say, well, I can't say definitively what this might be because we have no final proof.

But I just want you to know there's tens of thousands of people around this country who are suffering, and have been suffering for five years. The war was in 1991; we had a long time to prepare for it. And they're probably not quite as sympathetic as some of your colleagues are to just being able to say until I have the final proof.

Dr. JOSEPH. Well, if you're suggesting, Senator, that we're uncaring or insensitive to the veterans, I think the evidence is exactly to the opposite. But your stretch between those two Abou-Donia discussions and the veterans who are indeed ill and suffering is a long stretch indeed on the basis of the evidence you have.

Veterans' Ranking Member ROCKEFELLER. And certainly, is a long stretch in your mind. I understand that very well.

Thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you, Senator Rockefeller.

Senator Shelby.

Senator SHELBY. Thank you. Thank you, Mr. Chairman. Dr. Joseph, we've been over some of this before. And I'll try to get to the crux of it. As you'll recall, I was tasked by Senator Nunn back in '93 with other people on the Armed Services Committee to look into this. And we came up with the evidence that we furnished the Pentagon that the Czechs had detected, I believe on more than two incidences, the presence of chemical agents in the Gulf, that the French had also detected chemical agents, and at that time I recall the Pentagon denied all of this. They said it wasn't there; had no evidence of that. And then it came to light later that the Pentagon, through the Central Command, had been notified of this. It was in the bowels of the Pentagon somewhere.

Now, what I'm getting at is something that bothers a lot of us. And it's deeply troubling to the public. The rediscovery, or resurfacing of reports of chemical agents and so forth in the Pentagon's got to be disturbing to the American people, because this has been going on since, at least since '93, probably back to '91. And yet, we come before this Committee today and I believe the phrase one of us used was, the rediscovery, in other words, something is there.

SSCI Chairman SPECTER. Right.

Senator SHELBY. Something that has been denied. Candor is important. You know, a lot of us, probably most people on this Committee, this Joint Committee, have really gone to great lengths to believe the Pentagon, you know, on all this. And then you—we see doubts there when there's all this denial all the time.

Now, I want to get into something that's deeply disturbing to me. It's my understanding that it was reported that as many as eight

days of information from March 1991 are missing from chemical warfare logs. Gap again. Remember the old gap in the tapes and so forth? If you go back 20 years ago. This is the same time, Dr. Joseph, that the Army destroyed the Kamisiyah weapons storage facility in question. Yet, it's our understanding that there's a gap in the logs. Are any of you on the panel today aware of these logs, and can you explain why there are gaps in information that could be so critical to the central question here.

Dr. Joseph.

Dr. JOSEPH. I have heard recently, I can't remember whether it's in the last day or two, of that eight day gap. I don't have personal knowledge of it, but I wouldn't be totally surprised if it were true. I'm sure if you go looking for any particular piece of information, related to the logs, et cetera of the war, you might find difficulty in finding it depending on where it is.

Senator SHELBY. Even——

Dr. JOSEPH. I don't——

Senator SHELBY. Even if this was a critical eight day period in here and wouldn't it——

Dr. JOSEPH. And that's now the question.

Senator SHELBY. Let me finish.

Dr. JOSEPH. Yeah.

Senator SHELBY. Wouldn't it bother you to say, gosh, what's missing? This is critical to this—tying all this together. Perhaps answering a lot of questions. What happened to these missing logs which obviously contained raw information that could help critically in this evaluation? Go ahead, Doctor.

Dr. JOSEPH. And that's exactly why, Senator Shelby, in the part of my final portion of my testimony which I didn't get to deliver, and in Secretary White's letter this morning, among the things the Department is doing and response to the Kamisiyah and all the watershed changes that it's made, is one, he has tasked the Army to have the inspector general of the army go back and run the chronology of Kamisiyah. And two, he has tasked the assistant to the Secretary of Defense for intelligence matters to go back and run the chronology of Kamisiyah in the Department of Defense. That's the kind of step that you take when you want candor and you want to find out what happened back there in 1991.

Senator SHELBY. But isn't candor the—should be the order of the day; not denial? Not saying, gosh, we rediscovered this. We found something that was in doubt to begin with, you know, that other people had said was there, and there was denial. Candor's important. Isn't, honesty?

Dr. JOSEPH. Of course it's important. And you know, I've heard many other officials in the Department of Defense say, previously, we have no persuasive evidence. We have no—I have said that myself on numerous occasions in the past. And I did that on the basis, and I believe the others did on the basis of their very best knowledge at the time. Now, our knowledge has changed with Kamisiyah, and we're saying something very different.

Senator SHELBY. Mr. Chairman, if you'll indulge I won't take but a minute.

I've received, Dr. Joseph, some disturbing calls regarding the Gulf War Syndrome program at the Walter Reed Army Medical

Center. I've been told by more than one individual that the staff there, of this program, are telling patients at Walter Reed—of all places—that their ailments are psychosomatic. Are you aware of this treatment of our service members and if you're not would you look into it?

Dr. JOSEPH. I will look into that specifically and respond to you forthwith.

Senator SHELBY. Dr. Joseph, could you comment on the recent study that has found an increased presence of medical problems with the women that served in the Gulf?

Dr. JOSEPH. Well, if you're—there was a newspaper article that I saw yesterday that described that study—that's my only knowledge of it. As you probably know, and as we can provide you in great detail, we and the VA have a whole range of studies going on, reproductive health studies, hospitalization studies, morbidity and mortality. And in our reproductive health study to date and I believe in yours as well, Ken, we have no evidence for an elevated rate of reproductive health problems in women. I'm not sure about the VA, so I shouldn't put words in your mouth. But I know that's true—at the current stage—it takes time, in our study.

Senator SHELBY. We know.

Dr. Joseph, if there were more than a thousand rockets that contained sarin, that were destroyed by the 37th Engineering Battalion—and this is what we've been told—according to eyewitnesses interviewed by various publications, that the U.S. explosives set off rockets in all directions for days in the area. Do you dispute that?

Dr. JOSEPH. I think that's probably a question for Mr. McLaughlin to respond to. And we're awaiting the modeling which will give us a sense of what the cone of—or that zone of exposure would be.

Senator SHELBY. But modeling is based on basic assumptions on anything, is it not?

Dr. JOSEPH. Yes, sir. Number of rockets, what was in the rocket, what the meteorology of the day or the time would be. And also, what you assume is the lowest level that might lead to harm and maybe some other things.

Chairman SPECTER. Mr. McLaughlin, if you want to comment, will you try to do it briefly because we're trying to conclude the hearing.

Mr. MCLAUGHLIN. Yes.

In the case of the second area that we're modeling, the so-called pit, we're assuming an explosion of about 550 rockets. I could tell you how we arrived at that figure, if you wish. We're not done with that modeling, but that's the quantity of weaponry we believe was exploded there. And we're modeling it with the upper limit assumption in order to get the most extreme outcome we can.

Senator SHELBY. Mr. Chairman, thank you for your indulgence.

SSCI Chairman SPECTER. Thank you, Senator Shelby.

Senator Robb.

Senator ROBB. Thank you, Mr. Chairman.

I certainly shared everyone's frustration about our inability, at least to date, to define exactly what the problem is and how to resolve it. I have a question that I'd like to ask in very general terms, to get away from some of the more precise matters that I think re-

quire a more detailed analysis. And that's whether or not we have any evidence of CW agents that we know, on the basis of prior testing, to have the kind of delayed effect that might at least explain symptoms that did not manifest themselves at that time, if the contemporaneous interviews are correct, but have clearly manifested themselves since then in ways that are very troubling at this time.

Number one, are there known agents of this sort in the world inventory?

Number two, are there any such agents that Iraq was known to possess—or any that we may have had possession of at one time that we may have somehow, directly or indirectly, provided to the Iraqis before the Gulf War?

Dr. JOSEPH. I don't believe so, Senator, but I'd like to just qualify that remark by saying I want to get back and check the list and be sure we've got all the medical data before I say so. But I don't believe so, I don't believe there is anything, you know, our knowledge of what currently exists as chemical or biological weapons, which would produce this picture that we're describing, particularly the no acute effects and later chronic effects.

Senator ROBB. Mr Mclaughlin, from the intelligence side, do you know of anything that would——

Mr. MCLAUGHLIN. I do not.

Senator ROBB [continuing]. Meet that description?

Mr. MCLAUGHLIN. No, I do not.

Senator ROBB. All right. Let me just ask one other question and I'll let the——

Dr. KIZER. Could I also respond to that?

Senator ROBB. Please, Dr. Kizer.

Dr. KIZER. From VA's perspective, we are privy to what is published in the open, peer reviewed literature; what information might be contained in internal documents or classified we would not know about.

Senator ROBB. I realize that we could look to other sources, but gather that, as far as the medical understanding of the effects of these CW agent's is concerned, we don't know of anything that you would describe as the most likely agent to induce these kind of long-term, but not immediate, effects.

Dr. JOSEPH. That's correct.

I think one other slight caveat, going back to Ken Kizer's earlier testimony, we don't know what we don't know. And the whole area of human response to chemical or biological warfare agents is one in which it is difficult to do research, animal or human certainly, and in which much of the detail and assurance that we have in other areas in medicine we don't have. And I think that's why the issue of now pushing on with that becomes important.

Senator ROBB. Well, let me ask you this. As a part of your additional research and/or modeling, are we cooperating, say, with the Japanese, who have had the sarin attack in the subway, in terms of any follow-up with respect to residual symptoms that they might have, or with some of our own forces that we know were exposed to mustard gas or other things that we know were at least present and have been positively identified? Do we have any scientific analysis of the long-term effects of those chemical agents on people whom we know were actually exposed to those agents?

Dr. JOSEPH. Well, of course, now that we presume that there was at least some exposure in the Gulf to U.S. troops, that is the whole importance of having the clinical evaluation program base to look out in——

Senator ROBB. And I understand that. What I'm asking is, are there other collateral studies or evidence that would at least help to establish that there are the kinds of residual effects here? Or do we believe, in effect, that we're dealing with a phenomenon that has yet to be discovered and analyzed in a way that would enable us to treat it?

Dr. JOSEPH. I believe we have a channel for continuing sharing of information on the topic with the Japanese, but I know of nothing more formal than that, in light of what you're describing.

Dr. KIZER. Let me add that the VA has been collaborating with the Japanese investigators through one of our environmental hazard centers long before this announcement was made in June. And I would also note that that is the reason why we're organizing this international symposium—that is, so that we can capitalize on the knowledge that may exist in countries other than the U.S.

Senator ROBB. Let me ask just one final question of either of our medical experts, and that is, what is it that we need to know, or would like to know, in order to solve this particular mystery? What is it we're looking for that would give us the kinds of either insights or scientific evidence to support some definitive conclusion?

Dr. JOSEPH. I would say two things, Senator. One is we need to know, we're looking to know whether in the really massive amount now of clinical data that we have between the VA and DOD, whether there are any patterns, whether there are any signposts, whether there is any clustering that would lead us to some focus on a particular issue, in particular this one. That I think we have done an awful lot to put in place.

The second issue is we need to know the answer to the question, can we be confident that without acute health effects of low level exposure there are no long-term chronic health effects. And I think, as we've both said, that's what the current scientific body of opinion is, but we can't be satisfied with that answer. Those two questions are the most important.

Senator ROBB. With sufficient resources, do you believe that those questions can be answered?

Dr. JOSEPH. I think the first question we've already put a great deal of resources into, and I think that question can be answered, although the great difficulty comes, it's often a question of proving the negative.

On the second one, I wouldn't hazard an opinion. I know additional resources and additional work on the topic will get us further down the road, but whether it would get us definitively to a point, I couldn't say, sir.

Senator ROBB. Thank you.

Dr. JOSEPH. We need to do it.

Senator ROBB. Mr. Chairman, my time is up, and I thank you.

SSCI Chairman SPECTER. Thank you very much, Senator Robb.

This is obviously not the final hearing on this matter. There are a great many questions left unanswered. I'm hopeful we'll be able

to conclude the hearing at this point. Senator Rockefeller, do you——

Veteran's Ranking Member ROCKEFELLER. Sort of a question and a half.

SSCI Chairman SPECTER. Okay.

Veterans' Ranking Member ROCKEFELLER. Is that all right?

SSCI Chairman SPECTER. Why don't you take two questions? But two questions, but only two questions.

Veterans' Ranking Member ROCKEFELLER. No more.

SSCI Chairman SPECTER. Okay.

Veterans' Ranking Member ROCKEFELLER. Let's get back to the DOD investigation team report, Dr. Joseph. That report rejects the primary scientific evidence that supports toxicity of a low-level exposure, which is a 1975 study by Lohs, because it's based on a work by a Dr. Spiegelberg in 1961 and 1963. Amazing that there's nothing more recent than that.

Dr. JOSEPH. Well——

Veterans' Ranking Member ROCKEFELLER. I'll finish asking my question, then you answer.

In rejecting the 1975 study, DOD's investigation concludes that the underlying studies were flawed because the workers who were studied, quote, "Were making a large number of different agents and were constantly shuttled back and forth between different chemical agents, including pesticides." So the underlying studies were just too uncontrolled in the view of DOD, is that right?

Dr. JOSEPH. No, I read it quite differently, Senator. The '61 or '63 work was itself a description of the actual research. The actual research was done in the late 1930's and 1940's in Nazi Germany looking for chronic health effects of factory workers who had been exposed to levels of chemical agents. Now, those factory workers, were probably not in the best of health, many of them were probably slave labor in the factories. Two, we know nothing about the prior state of their health. Three, they were exposed not only to a variety of agents, but they were exposed, those that survived, over a long period of time. That's 1930's, 1940's work, and that's what all the rest of the chain you described is solely based on, sir.

SSCI Chairman SPECTER. One more question, Senator Rockefeller.

Veterans' Ranking Member ROCKEFELLER. And that's all I'll have.

I'm very aware, Dr. Joseph, that you weren't here in 1991, you were appointed by the President in 1993, the current President. I understand that. But I am also aware that the views that you've expressed in your public statements, in essence, are that you would not really have done anything different if we had to do this all over again in the Persian Gulf War—let me finish my question—regarding protection of soldiers' health.

Now, if that is not a fair summary, based upon your current state of knowledge, what do you think we should have done differently to protect our soldiers and investigate their illnesses?

Dr. JOSEPH. I will tell you, I'll give you a brief resume and I'd like to also respond to you on paper in greater detail.

What would I not do differently first. I believe—and I know we may differ on this—that the people who took the decision to immu-

nize our soldiers in the Gulf and to provide them with pyridostigmine in that setting, took the right decision. That is my belief and I'd like to believe that if I were in the same position I would have done exactly that.

What would I have changed?

Veterans' Ranking Member ROCKEFELLER. Even though it was going to be ineffective against the agent which we knew——

Dr. JOSEPH. Well, that's—excuse me.

Veterans' Ranking Member ROCKEFELLER [continuing]. Was at play: sarin.

Dr. JOSEPH. That's, I believe, an oversimplification, Senator. We did not know that they might not be exposed to soman. I think I differ with your characterization of PB as counterproductive or harmful, I guess was the word you used. In the case of sarin exposure, I don't believe that that's quite accurate. And a simple answer to your question, yes, sir. Even though what we knew we knew, as I understand it, and whether they needed protection I think that was absolutely the correct decision to take.

Now, what would I have different? Well, one of the things I would have different is expressed in some detail in my testimony in terms of the things we have done in the last two years to build a different way, an improved way to look at before, during and after deployment, the assessment of health in our troops. That's in detail in my testimony. I can give you even more detail than that if you want it. I think it would have clearly been better to have the kinds of pre- and post-health assessment information, to have the kind of environmental health monitoring, to have the kind of combat stress teams on the ground, to have the kind of preventive medical teams on the ground, the way we do in Operation JOINT ENDEAVOR. That's easy with hindsight to say. But I would have that differently.

Secondly——

SSCI Chairman SPECTER. If this is going to be protracted, Dr. Joseph, would you supply it in writing please?

Dr. JOSEPH. Forty-five seconds more and——

SSCI Chairman SPECTER. Go ahead.

Dr. JOSEPH. Okay. The other thing I would have differently is I would have a more effective link between the various operational intelligence and medical views of what might be going on in theater. I think we've learned that lesson out of the desert. I think we do do it much better now. Those two things I would have differently. The basic decisions, Senator, I think were the correct ones.

Chairman SPECTER. I have a few——

Veterans' Ranking Member ROCKEFELLER. Thank you, Mr. Chairman.

SSCI Chairman SPECTER. Thank you very much, Senator Rockefeller—a few words to say in conclusion, but I want to yield at this time to my colleague, Senator Simpson with one prefatory note. When I came to the Senate 16 years ago, Senator Simpson was Chairman of this Committee. He's done a great many things in the interim before returning to the Chairmanship. But we all know he's about to depart. This is the last week of the Senate. We expect to conclude our business yet this week. And he has brought a rare

combination of intellect and balance with extraordinary humor and levity to guide us in so many of our deliberations. He's received a lot of accolades, so I'll conclude mine at this point.

Veterans' Ranking Member ROCKEFELLER. I will join you in that assessment, Mr. Chairman.

Veterans' Chairman SIMPSON. You can both go ahead a little further.

[General laughter.]

Veterans' Chairman SIMPSON. No need for you to fall short.

I thank you. One of these gentlemen will be the Chairman of the Senate Veterans' Affairs Committee next year, and I wish them well, because they will continue to be besieged by emotional pressure from groups and people throughout the United States that are almost overwhelming. They are fueled by a media that will pick up any possible thing about any person who is sick or ill. The next chairman will have to do the right thing in the midst of emotion, guilt, pressure, frustration, all the things I spoke of in the beginning.

The part that has been very frustrating for me all the years of my Chairmanship and serving with Al Cranston as Ranking Member, is to see finally people come and testify and they say, "We don't really know what the hell went on, but we live in a great country, and we're dealing with veterans, so just pass the legislation." Then nobody ever talks about how you pay for it. I know that's a sick idea. My problem is that I was on the Entitlements Commission. Members of Congress continue to pour out the Treasury to anybody, regardless of sound medical or scientific evidence. And at some point, somebody—usually one of those poor veterans or their children or somebody—is going to have to pay the bill. The bill today is six trillion bucks. We have two candidates for President and neither one is speaking on that issue in any way whatsoever. Medicare, Medicaid, Social Security, Veterans' Benefits, Congressional retirement, and Federal retirement are all depending on the Federal Treasury, and none of us at this table will be affected in any way at all. The only people affected will be people between the ages of 18 and 40 because they will have to pay the bill. When it comes due, they'll be just wandering around in the swamps. They won't even know what hit them.

So those are the things that can get you labeled "anti-everything"—anti-veteran, anti-caring, slob of the earth. I've been called everything you can imagine in my work as Chairman of the Veterans' Affairs Committee. But I tell you what, I've learned to enjoy the combat with the veterans organizations—and boy, there are some tough ones. They do good work and they're sincere.

But the point of any hearing should be—and I commend Senator Specter and Senator Rockefeller—what happened? When did you find out? What was done? What are you going to do?

You know, you could have 500 reports on Agent Orange saying there "ain't nothing there," and then one guy comes up to refute that and it's the front page of every paper in America. Let me tell you, ladies and gentlemen, if there were something to do about Agent Orange, it would have been done by now, but there's no way to tag it down and tie it down. If there had been, those lawyers

would have done it when they got the settlement out of the chemical-producing companies for $200 million and walked away.

We need to stick with—and it's going to be hard for these two gentlemen—the patience and try to ward off those who come in and know how to work it, and know how to pry the lid off Fort Knox. I've heard all sorts of witnesses over the years on Agent Orange and prisoners of war. I remember the guy that said, "I know where they are. They're in a cage. We've got pictures of them." I said, "Show them to me and Al Cranston." Then he said, "I'll give it to you for two million bucks." I said, "Get your butt out of here." We took care of him.

That's the kind of stuff that goes with this Committee on Veterans' Affairs. We see research on chickens and cockroaches and everything else. I don't know anything about them but I do know the difference between chickens and human beings. These are the kind of things we deal with. They come from the best interests of people who are deeply concerned but there isn't a single one of us in this room that isn't a deeply caring person or less caring than somebody else or you on that panel.

So I have one thing for the record because I see the Internet is all clogged up on how to send a letter to Congress. I once saw one that said 60,000 people are on the Persian Gulf Registry. That is correct, but I want the record to show that 12 percent of the registry participants report no current health complaints of any kind. None. Somebody ought to pick that up. We won't ever read it in the paper or hear it on television. I can assure you. But 7,200 people on the 60,000-registry of human beings are saying there's nothing wrong with them at all. Yet I read this sample letter to Members of Congress circulating on the Internet. It says, ". . . approximately 60,000 American soldiers who served in the Gulf War have claimed they may be ill due to various chemical and biological exposures. . . " unquote. That is not true. I deal with a lot of stuff as Chairman of this Committee that isn't true.

So I am going on to Harvard. My God, that will be a marvelous experience.

I can just say that if anyone can show me that there are hundreds or thousands of human beings in this country, especially veterans, who are not being cared for, then I'm going to refer them to this man right here, Dr. Kizer. To me he holds the promise of doing the most extraordinary job that I have ever seen pursued in his work. I commend him. He is the most able VA spokesman during my tenure because he doesn't mess around. He lays it out. The veterans service organizations go goofy sometimes, and the scientists go goofy sometimes, and I go goofy sometimes, but he doesn't. I commend him. So if anyone writes to the panel or if we hear from somebody again about what are we doing for the veterans of the United States, tell them, "Everything a caring nation can do." We're continuing to do it. What we're doing for the Gulf War veterans is extraordinary, and what we did for the Vietnam veterans would fill books compared to what we did for the World War I veterans. We just let them die out. And the World War II veterans—we've taken care of them as best we can.

So that's my swan song, and I want to thank you. It's been a good run, and I admire you all greatly. I admire Senator Rocke-

feller. He feels passionate about these things. I don't share his passion at all. Senator Specter will be just as passionate. You'll hear about his father Harry. I've heard that. He must have been a wonderful guy. I tell him about my father Milward who was a member of the Army in the First World War. I commend them and wish them well. God Speed.

Thank you very much.

SSCI Chairman SPECTER. Thank you very much, Senator Simpson. It's not possible to top Senator Simpson, so I shall not say much.

We'll be visiting this subject in the future, beyond any question, and my hope would be that we move ahead to get conclusions very, very promptly. I would have preferred, Dr. Joseph, to have heard some responses as to the question put by some of the doctors even without peer review. It is a very different standard when you go into a court and you offer expert witnesses, and you have juries make conclusions, contrasted with the sovereign immunity which the Government of the United States has—for good reason—but we have to move ahead.

And when you were asked the question—after saying we found out about it in June of this year—could we have found out about it sooner, you said, well, that's hard to say. I believe that the government owes a very, very high duty to move ahead with speed, and to make the inquiries, and to find out before the government is pressed. But we will revisit this in some substantial detail, and we'll miss Senator Simpson.

I would ask unanimous consent, that without objection, the letter from Deputy Secretary White dated today, to Senator Thurmond will be made a part of the record in conclusion, and the New York Times article of September 6, 1996.

[The letter and the article referred to follow:]

DEPUTY SECRETARY OF DEFENSE,
Washington, DC, September 25, 1996.

Hon. STROM THURMOND,
Chairman, Senate Armed Services Committee,
U.S. Senate, Washington, DC.

DEAR MR. CHAIRMAN: The Department of Defense continues to investigate vigorously matters relevant to the illnesses of Persian Gulf War veterans. I want to report to you on the status of our current efforts, and to apprise you of the fact that we are redoubling our efforts, broadening the scope of our investigations and adding additional resources to the effort in light of several recent developments.

At the end of the Gulf War, American troops moved rapidly through Iraq destroying ammunition storage facilities. At one of these facilities, Khamisiyah, we have learned that U.S. troops destroyed chemical munitions on two separate occasions. The troops were unaware of this at the time. At this time, we do not know if U.S. troops were exposed to toxic chemicals during these events, but this new information requires more research and a vigorous investigation. We must now broaden our efforts and intensify our focus on the possibility of low-level exposures of U.S. troops.

We are making every effort to contact individuals who were present at the site and to enroll them in our clinical evaluation programs. We remain committed to the care and welfare of our active duty personnel and of our veterans.

In light of these developments, I am today initiating a number of immediate and longer-term actions with regard to the Department's efforts concerning sponsored medical research, clinical evaluations, document review and declassification, and investigations of specific incidents. These efforts include:

Forming an Action Team to completely reassess all aspects of our program. This team will report directly to me.

Drawing on additional outside analytical and management resources to help in the reassessment because the new information demands new and different expertise.

In addition to the reassessment, I am directing the following specific initiatives immediately:

1. DoD-sponsored research into the possible effects of low-level chemical exposure will total $5 million. In addition, I am directing the Assistant Secretary of Defense for Health Affairs to explore further research projects in this area where additional resources could be usefully applied.

2. Our clinical investigation efforts will be broadened, in an effort to include personnel in the area of potential exposure around Khamisiyah in our comprehensive clinical evaluation program.

3. The Department of Defense will ask the Institute of Medicine to re-validate DoD clinical protocols and practices in light of possible low-level exposure.

4. The Secretary of the Army has been directed to instruct the Army Inspector General to conduct an inquiry into the events surrounding the destruction of the munitions at Khamisiyah and supplement the efforts of the DoD Persian Gulf Investigation Team where possible.

5. The Assistant to the Secretary of Defense for Intelligence Oversight will investigate and report to me on the information received by the government pertaining to Khamisiyah in 1991 and any other related intelligence information and to report on the procedures by which this information was handled.

6. The Interagency Security Classification Appeals Panel (ISCAP) has been asked to undertake an objective review of the process and guidelines by which documents are declassified and placed on GULFLINK and to provide recommendations regarding this process.

This Administration, and Secretary Perry and I personally, remain committed to a full effort to understand Persian Gulf War Veterans illnesses and to provide all necessary medical care. We will keep you apprised of our efforts in this area. Thank you for your support.

[From The New York Times, Sept. 6, 1996, Friday, Late Edition—Final]

Presidential Panel Says Pentagon Lacks Credibility for Inquiry on Nerve Gas Exposure

(By Philip Shenon)

Investigators for a Presidential advisory committee said today that the credibility of the Defense Department had been "gravely undermined" by its inquiry into the possible exposure of American troops to Iraqi chemical weapons during the 1991 gulf war. They recommended that the investigation be taken away from the Pentagon and handed over to an outside body.

The investigators also concluded that as many as 1,000 American troops—more than double the number that had been originally reported by the Pentagon—were exposed to sarin, a deadly nerve gas, when a battalion of American combat engineers blew up an Iraqi ammunition depot in March 1991.

"The Department of Defense has conducted a superficial investigation of possible chemical and biological agent exposures which is unlikely to provide credible answers to veterans' questions," the investigators said in a statement presented today to the Presidential Advisory Committee on Gulf War Veterans' Illnesses, a panel created last year by President Clinton. "A credible review of these allegations and concerns cannot be accomplished by the Department of Defense."

The findings by the investigators, who work for the 12-member committee appointed by the White House, were an indictment of the leadership of the Pentagon, which until this year had insisted publicly that it had no evidence that large numbers of American soldiers had been exposed to chemical or biological weapons despite reports of mysterious, debilitating illnesses among thousands of gulf war veterans.

The Defense Department defended its investigation of the issue, with its senior health officer, Stephen C. Joseph, telling the panel at a public hearing today that the Pentagon's internal inquiry into gulf war illnesses had been "a major contribution to the department and, we would suggest, to the public."

The investigators' findings have not been formally adopted by the panel—that is expected to happen late this year, as the panel completes its final report—but there was no substantive criticism of the findings when they were discussed in today's hearing.

The panel is led by Joyce C. Lashof, a physician who is the former president of the American Public Health Association, and includes several other prominent scientists and researchers.

"The Department of Defense's official position has remained essentially unchanged, and that can be summarized as the three no's—there was no use, there was no exposure, there was no presence," the committee's chief investigator, James Turner, told the panel at the hearing.

"The inflexible reassertion of this position in the face of growing evidence that there were possible low-level exposures—there were chemical munitions in the Kuwaiti theater of operation, there were releases—have served to gravely undermine the credibility of the Department of Defense's internal investigation."

He said that the Pentagon team in charge of the investigation had spent too much time on scientific research that would be "more appropriately delegated to other components of the Department of Defense" and too little time in studying intelligence reports and combat logs, and in interviewing veterans who said they had evidence that chemical and biological agents were released.

A member of the panel, Andrea Kidd Taylor, an occupational health consultant, said the Pentagon's handling of the issue had created "the feeling of cover-up, even if there isn't any cover-up."

In testimony before the committee, Dr. Joseph, the Assistant Secretary of Defense for Health Affairs, rejected the criticism of the Pentagon's investigation, and suggested that the internal inquiry would continue despite the recommendation today that it be handed over to an outside body.

"While we are always open to constructive criticism, let me respectfully suggest that this concern fails to recognize and appreciate the department's complete commitment to investigating the possible causes of Persian Gulf illnesses in the context of its support for all gulf war veterans," he said.

Still, Dr. Joseph said that the Pentagon was willing to consider new methods of investigating the issue "if together we can work out an alternative rule of thumb for which things we should look at."

The Defense Department's credibility on the issue has been shaken in recent weeks, especially after the disclosure in June that a group of American conbat engineers may have been exposed to nerve gas and mustard gas when they blew up the Kamisiyah ammunition depot in southern Iraq in March 1991.

Pentagon officials initially said they had no conclusive evidence that any American soldiers had been exposed to chemical weapons at the depot but that 300 to 400 troops had been in the vicinity at the time of the explosion.

But based on evidence compiled by the Central Intelligence Agency, investigators working for the Presidential advisory committee said today that the number of troops who might have been exposed to nerve gas was actually about 1,100. And they reported that the evidence of the release of chemical agents at Kamisiyah was "overwhelming" and that "exposure to troops within 25 kilometers of the demolition activity should be presumed."

Despite the Pentagon's repeated assertion that it had no evidence that American soldiers had been exposed to Iraqi chemical weapons, a long-classified intelligence report made public last week showed that senior officials at the White House, the Pentagon, the Central Intelligence Agency and the State Department were informed in November 1991, eight months after the demolition, that chemical weapons had been stored at Kamisiyah.

Dr. Joseph said today that it was not surprising that the reports were overlooked in 1991 since at that time, "no one was thinking about a large number of our armed forces coming back and complaining of symptoms and illnesses following their service in the gulf war."

Mr. Turner, the panel's chief investigator, was also critical of the Pentagon's "slow, reluctant, on-again, off-again release of information to the public." He said that it had "served to also undermine credible confidence in the Department of Defense's efforts."

James J. Tuite 3d, a former Congressional investigator who is the founder of the Gulf War Research Foundation and has emerged as a chief critic of the Pentagon on the issue, welcomed today's findings. He described the Defense Department's investigation of gulf war illnesses as "dishonest and irresponsible" and said that it had been influenced by a "vested interest in the outcome of the investigation."

SSCI Chairman SPECTER. We thank you, Mr. McLaughlin. I note that you've been accompanied here today by Ms. Sylvia Copeland, who is chief, Gulf War Illness Task Force. We thank you, Dr. Joseph, for your service. Most of the questions were directed at you

because essentially, it is the Department of Defense response that we need. We thank Dr. Kizer, and note that he's been accompanied by Dr. Francis Murphy, Director of the Environmental Agents Service, Department of Veteran Affairs.

That concludes our hearing. Thank you all very much.

[Thereupon, at 1:12 o'clock p.m., the hearing was concluded.]

CIA Report on Intelligence Related to Gulf War Illnesses

2 August 1996

CIA Report on Intelligence Related to Gulf War Illnesses

Key Findings:

On the basis of a comprehensive review of intelligence and other information, we assess that Iraq did not use chemical or biological weapons or deploy these weapons in Kuwait. In addition, analysis and computer modeling indicate chemical agents released by aerial bombing of chemical warfare facilities did not reach US troops in Saudi Arabia. Coalition bombing resulted in damage to filled chemical munitions at only two facilities–Muhammadiyat and Al Muthanna–both located in remote areas west of Baghdad. UNSCOM inspections concluded that no chemical munitions were destroyed at the An Nasiriyah Ammunition Storage Area, countering publicized theories that fallout from the facility were the cause of credible but unverified nerve agent detections in Saudi Arabia. We assess no biological weapons or agents were destroyed by Coalition forces during the Gulf war. Finally, Iraq never produced radiological weapons for use and bombed Iraqi nuclear facilities caused only local contamination north of the Kuwait Theater of Operations.

A recent assessment based on a comprehensive review of all intelligence information and a May 1996 UNSCOM inspection concludes nerve agent was released as a result of inadvertent US postwar demolition of chemical rockets at a bunker and probably at a pit area at the Khamisiyah Ammunition Storage Area in Iraq. We have modeled the chemical contamination levels in Iraq resulting from the bunker destruction so that the DOD can assess who may have been exposed. Analysis of demolition activities in the pit area is still under way.

40-180 97 - 3

Contents

CIA Report on Intelligence Related to Gulf War Illnesses

No Intentional Iraqi Use of Chemical or Biological Agents

We assess that Iraq did not use chemical or biological weapons against Coalition troops based on our thorough review of intelligence reporting and on the lack of casualties that was a signature of chemical use during the Iran-Iraq war. We assess that Iraq probably did not use these weapons because of a perceived threat of overwhelming Coalition retaliation.

Chemical Weapons at Two Southern Iraq Depots: An Nasiriyah and Khamisiyah

We assess that Iraq had chemical weapons at two sites (see figure 1) in Iraq–the An Nasiriyah Ammunition Storage Depot SW and the Khamisiyah (US name Tall al Lahm) Ammunition Storage Area–within the Kuwait Theater of Operations (KTO)[1] during Desert Storm. Both of these sites were large rear-area depots near the northern boundary of the KTO that stored mostly conventional ammunition. UNSCOM reporting and other information indicate that Coalition bombing did not destroy the bunker containing the chemical agents temporarily stored at An Nasiriyah. We have recently determined US troops were near a release of chemical agents at Khamisiyah, and DOD is assessing potential exposure.

An Nasiriyah: Chemical Munitions Moved to Khamisiyah

According to Iraqi statements to UNSCOM in May 1996, An Nasiriyah stored 6,000 155-mm mustard rounds from early January until they were moved to Khamisiyah after 15 February 1991. Iraq stored the munitions starting just before the air war at one bunker–called Bunker 8 by Iraq–at An Nasiriyah Ammunition Storage Area SW. According to Iraq, these mustard rounds were moved to Khamisiyah because of fear of additional Coalition bombing.

The Coalition bombing of An Nasiriyah on 17 January 1991 did not cause a release of chemical agent because the bunkers that were bombed on that date did not contain chemical agents. In May 1996, UNSCOM inspectors examined the rubble surrounding the bunkers at An Nasiriyah that were bombed on

[1] Generally defined as Kuwait and Iraq below 31 degrees north latitude.

17 January 1991 and determined that the bunkers contained only conventional weapons. Although mustard rounds were in Bunker 8 at An Nasiriyah on 17 January, UNSCOM information indicates they were not damaged. No other agents were known to be at An Nasiriyah.

Khamisiyah: Some Chemical Munitions Destroyed by Ground Troops

UNSCOM inspected chemical munitions at or near Khamisiyah in October 1991 and identified 122-mm sarin/cyclo-sarin (GB/GF) nerve-agent-filled rockets and 155-mm mustard rounds. At that time it was not clear whether these chemical weapons had been present during the Gulf war or whether, as was suspected at other locations, the Iraqis moved the munitions there shortly before the 1991 UNSCOM inspection.

During its October 1991 inspection of the Khamisiyah facility, the Iraqis told UNSCOM that Coalition troops had destroyed chemical weapons at a bunker earlier that year[2], and UNSCOM found chemical munitions at two open sites (see figure 2):

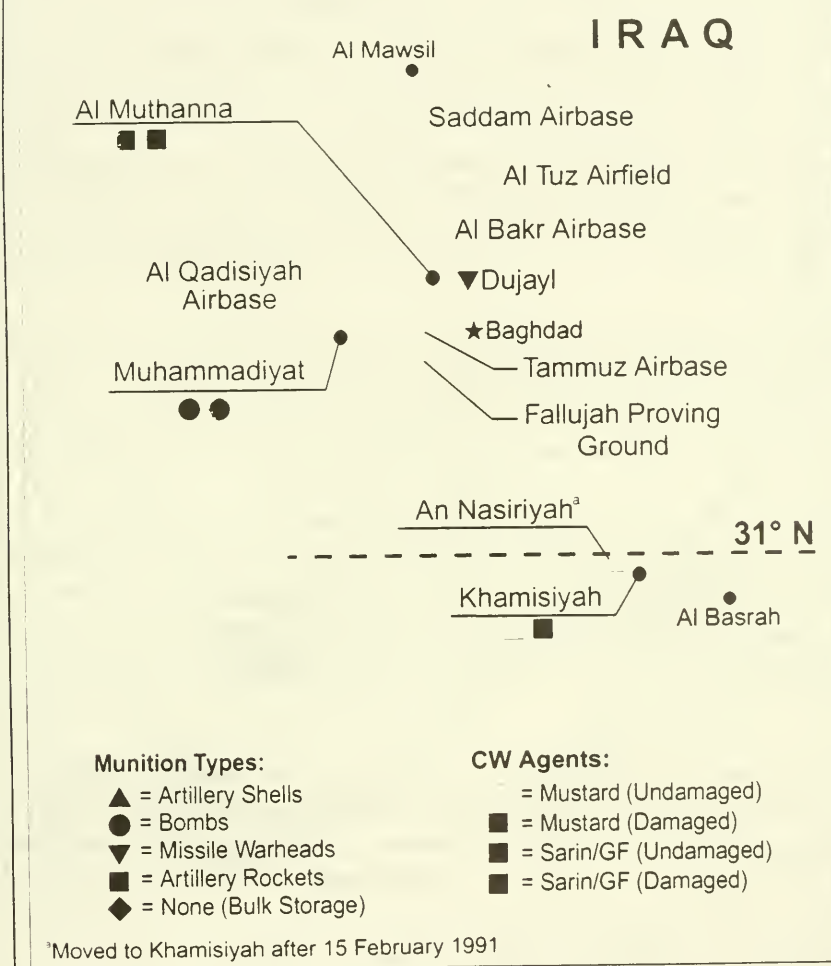
- Remnants of 122-mm rockets were identified at a single bunker among 100 bunkers, called "*Bunker 73*" by Iraq. It was unclear whether the munitions in Bunker 73 were chemical because there was no sampling or positive chemical agent monitors (CAM) readings and inspectors did not document characteristic features of chemical munitions.

- Several hundred mostly intact 122-mm rockets containing nerve agent–detected by sampling and with CAMs–were found at a *pit area* about 1 km south of the main storage area.

- Over 6,000 intact 155-mm rounds containing mustard agent, as indicated by CAMs, were found in an *open area* several kilometers west of Khamisiyah.

[2] This statement, however, was viewed with skepticism at the time because of the broad, continuous use of deception by the Iraqis against UNSCOM.

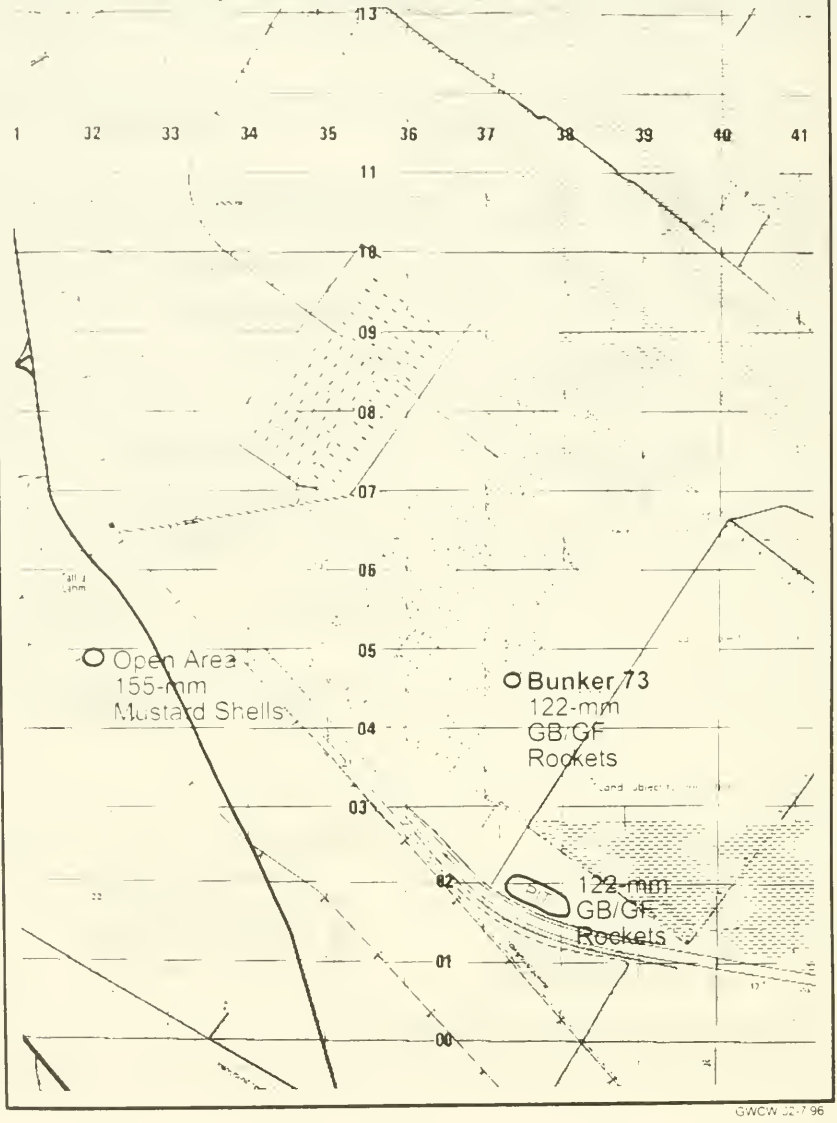
Figure 1. Iraq's Declared Wartime CW Agent Stockpile



[a]Moved to Khamisiyah after 15 February 1991

GWCW 01-7 96

Figure 2. Khamisiyah Ammunition Storage Area



Bunker 73 Rocket Destruction. The recent comprehensive review of all information enabled us to determine that US troops–not Iraq–destroyed the rockets in Bunker 73. In March 1996, in conjunction with DOD investigators, we determined that the US 37th Engineering Battalion had destroyed that bunker along with over 30 other bunkers on 4 March 1991.

However, it was not until UNSCOM's May 1996 inspection at Khamisiyah that it was determined that Bunker 73 contained remnants of 122-mm chemical rockets. During this inspection, inspectors documented the presence of high-density polyethylene inserts, burster tubes, fill plugs, and other features characteristic of Iraqi chemical munitions. Analysis of the contents of the rockets that UNSCOM found in 1991 in the pit area just outside the Khamisiyah Storage Area shows that the identical rockets in Bunker 73 had been filled with a combination of the agents sarin and GF. Therefore, we conclude that US troops destroyed chemical rockets in Bunker 73.

Pit Area Rocket Destruction. During the May 1996 UNSCOM inspection, Iraq claimed that some of the rockets located in the pit area had been destroyed by occupying forces. On the basis of very recent interviews of 37th Engineering Battalion personnel, DOD now believes that demolition personnel did set charges on stacks of rockets in the pit on 10 March 1991 at 1630 local time.

We are still trying to determine the number of rockets US forces could have destroyed. Once we determine the number, we will model the likely hazardous area caused by the destruction. Iraq told the May 1996 UNSCOM inspectors that it moved about 1,100 rockets out of Bunker 73 to the pit 2 km away to avoid chemical contamination of the bunker facility. The Iraqis claimed the rockets started leaking immediately after they were transferred from the Al Muthanna CW Production and Storage Facility just before the air war.

Open-Area Mustard Shells Intact. As discussed previously, more than 6,000 mustard rounds were moved from An Nasiriyah to an open area several kilometers west of the main facility at Khamisiyah. These munitions were found undamaged by UNSCOM in October 1991. They were later moved to and destroyed at UNSCOM's Al Muthanna destruction facility.

Modeling of Release of Agents From Bunker 73

Modeling of the potential hazard caused by destruction of Bunker 73 indicates that an area around the bunker at least 2 km in all directions and 4 km downwind could have been contaminated at or above the level for causing acute symptoms including runny nose, headache, and miosis (see figure 3 and text box). An area up to 25 km downwind and 8 km wide could have been contaminated at or above the much lower general population dosage limit.[3] From wind models and observations of a video of destruction activity at Khamisiyah, we determined that the downwind direction was northeast to east (see figure 4).

Modeling Assumptions About Bunker 73

Some of the following modeling assumptions were based on data from US testing in 1966 that involved destruction of a bunker filled with 1,850 GB rockets with maximum range similar to that of Iraqi rockets found in Bunker 73.

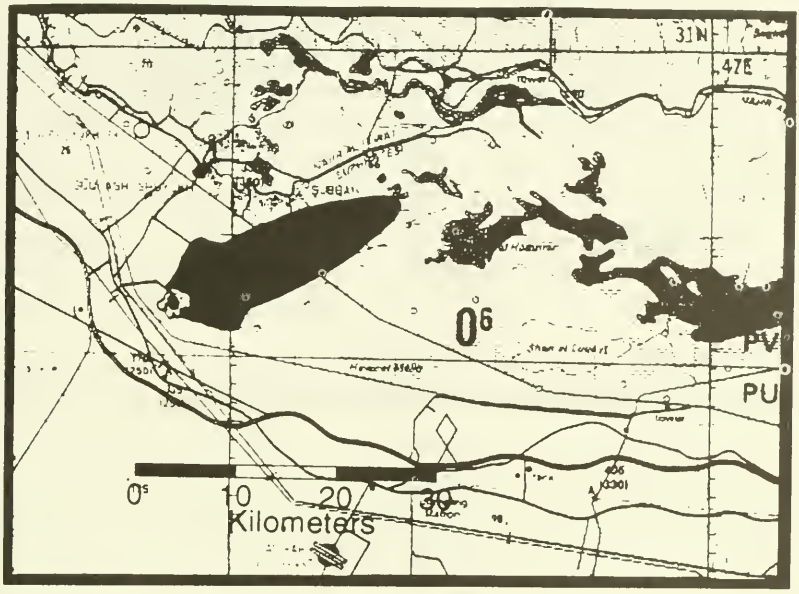
- 1,060 rockets as indicated by Iraq
- Rockets filled with 8 kg of a 2.1 ratio of GB to GF (contents assumed to be 100 percent agent) based on UNSCOM information and sampling from the pit.
- Ten percent of rockets ejected from the bunker, half of which randomly fall within a 200-meter circle, the other half falling within a 2-km circle based on US testing [a]
- Ejected rockets released agents on impact.
- A 15-meter mean agent release height was chosen to be conservative when determining ground hazard.
- All but 2.5 percent of agent in the bunker degraded by heat from explosion and motor/crate burning based on US tests.
- Winds slow to the northeast to east, based on modeling and analysis of a videotape of the destruction activity at Khamisiyah.
- Our models do not include the effect of the reported 32 to 37 conventional ordnance bunkers detonating and burning simultaneously with the chemical bunker. The added thermal energy created by explosions and fires in the other bunkers and solar heating caused by the increased amounts of smoke would tend to degrade agent as well as more quickly disperse the agent between the ground up to the maximum altitude of 800 to 1,200 meters.[b] This more rapid vertical spreading would tend to lower ground contamination in the area.

[a] DOD documents and multiple veterans reported that munition "cook-offs"–munitions that ignite and are ejected from their storage due to the demolition fire–sent ordnance as far as 10 km or more from the bunker facility. Nonetheless, we did not model this phenomena because we have been unable to determine whether any of the cook-offs involved chemical rockets, and if so, the number of rockets and how far they went.

[b] This altitude represents the estimated height of the mixing layer–the lower turbulent part of the atmosphere above which agent transport is inhibited due to a laminar boundary layer. This layer can often be seen from aircraft while landing in cities with polluted air.

[3] The Army established this dosage criteria for protection of the general population: a 72-hour exposure at 0.000003 mg/m3–significantly lower than the 0.0001 mg/m3 occupational limit defined for 8 hours–is specified.

Figure 3. 6.4-Metric-Ton Release of Sarin at Khamisiyah Storage Area, Bunker 73 on 4 March 1991 (1100Z)



Lethal

Incapacitated/Disabled

Vision Impaired
(Miosis)

First Effects **
(Runny nose, watery eyes)

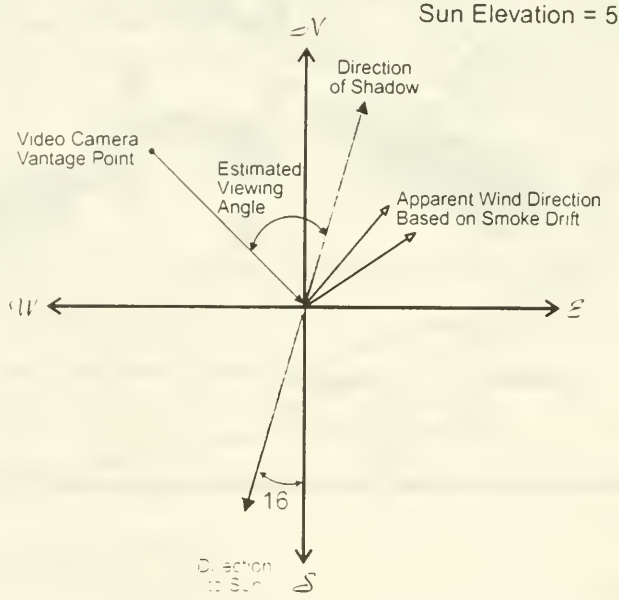
8-Hour Occupational Limit
(0.048 mg-min/m3)

72-Hour General Population Limit
(0.013 mg-min/m3)

** First effects also may include tightness of chest, coughing, skin twitching, sweating, and headache

2.5% Effective Release;
Mean Cloud Height 15 Meters

Figure 4. Determining Wind Direction During Demolition of Bunker 73 at Khamisiyah



- Shadows fall and smoke drifts roughly to the viewer's left in the video. On the basis of sun angles, this puts the wind direction in the northeast quadrant and puts the viewer roughly to the northwest.

GWCW 04-7-96

Chemical Fallout From Aerial Bombing: At Muhammadiyat and Al Muthanna

We conclude that Coalition aerial bombing damaged filled chemical munitions at two facilities–Muhammadiyat and Al Muthanna. In reaching this assessment, we examined all intelligence reporting on the location of chemical weapons in Iraq and the KTO and scrutinized dozens of sites (see table) that were alleged to be connected in one way or another with chemical weapons. Our modeling indicates that chemical agent fallout from these facilities–both located in remote areas west of Baghdad–did not reach troops in Saudi Arabia. Finally, we have found no information to suggest that casualties occurred inside Iraq as a result of chemical warfare (CW) agents released from the bombing of these sites–probably because these two facilities are in remote locations far from any population centers. The Muhammadiyat and Al Muthanna sites are both over 30 km from the nearest Iraqi towns.

According to the most recent Iraqi declarations, less than 5 percent of Iraq's approximately 700 metric tons of declared chemical agent stockpile was destroyed by Coalition bombing. In most cases, the Iraqis did not store CW munitions in bunkers that they believed the Coalition would target. The Iraqis stored many CW munitions in the open, protecting them from Coalition detection and bombing because we did not target open areas. In addition, all known CW and precursor production lines were either inactive or had been dismantled by the start of the air campaign.

Muhammadiyat

Iraq declared that 200 mustard-filled and 12 sarin-filled aerial bombs at the Muhammadiyat (US geographic name Qubaysah) Storage Area were damaged or destroyed by Coalition bombing. We have modeled the contaminated area resulting from bombing of Muhammadiyat, a site at least 410 km from US troops stationed at Rafha and even further from the bulk of US troops (see figure 5). Bombing of this facility began on 19 January and continued throughout the air war. We have been unable to determine exactly when the chemical bombs were destroyed. On the basis of recent Iraqi declarations, we have modeled a release of 2.9 metric tons of sarin and 15 metric tons of mustard on all possible bombing dates to find the largest most southerly hazardous area. Southerly winds occurred for only a few of the days the site was bombed. Figures 6 and 7 show that for general population limit dosages (above 0.013 mg-min/m3), downwind dispersions in the general southerly direction for sarin and mustard fall below this level at about 300 and 130 km, respectively.

Selected Suspect Chemical Weapons Sites Examined[a]

Facilities	Coordinates
Al Muthanna (Samarra)	3351N/04349E
Khamisiyah (Tall al Lahm)	3045N/04623E
Muhammadiyat (Qubaysah Storage Depot)	3315N/04241E
Al Walid Airbase (H3 Airfield)	3256N/03945E
Fallujah I (Habbaniyah III)	3329N/04349E
Fallujah III (Habbaniyah I)	3333N/04338E
Al Bakr Airfield [subordinate] (Samarra East Airfield)	3410N/04416E
Al Taba'at Airstrip (H3 SW Airfield)	3245N/03936E
Al Tuz Airfield (Tuz Khurmatu Airfield)	3457N/04428E
Dujayl/Awarah (Sumaykah SSM Support Facility SE)	3349N/04415E
Fallujah Chem Proving Gnd (Habbaniyah CW Training Center)	3308N/04352E
Murasana Airbase (H3 NW Airfield)	3305N/03936E
Qadisiyah Airbase (Al Asad Airfield)	3347N/04226E
Saddam Airbase (Qayyarah West Airfield)	3546N/04307E
Tammuz Airbase (Al Taqaddum Airfield)	3320N/04336E
Al Qaim Superphosphate Fertilizer Plant	3422N/04110E
Al Taqaddum Airfield	3320N/04336E
An Nasiriyah Ammo Storage Depot SW	3058N/04611E
Ash Shuaybah Ammo Storage Depot	3029N/04739E
Baghdad Ammo Depot Taji	3333N/04414E
Fallujah II (Habbaniyah II)	3329N/04340E
K-2 Airfield	3455N/04605E
Kirkuk Airfield	3528N/04421E
Kirkuk Ammo Depot West	3533N/04358E
Mosul Airfield	3618N/04309E
Qayyarah West Airfield	3546N/04307E
Qayyarah West Ammo Storage Depot	3552N/04307E
Tallil Airfield	3056N/04605E
Ubaydah Bin al Jarrah Airfield	3229N/04546E
Ad Diwaniyah Ammo Depot	3158N/04454E
Al Fallujah Ammo Depot South	3313N/04341E
Ukhaider (Karbala Depot and Ammo Storage)	3223N/04330E
Qabatiyah Ammo Storage (Wadi al Jassiyah Ammo Storage)	3352N/04242E
Tikrit Ammo Depot (Salahadin)	3443N/04339E

[a] These sites represent examples of sites that have been connected–often tenuously–to Iraq's chemical warfare program.

Figure 5. Iraqi Facilities With Damaged Chemical-Agent-Filled Munitions

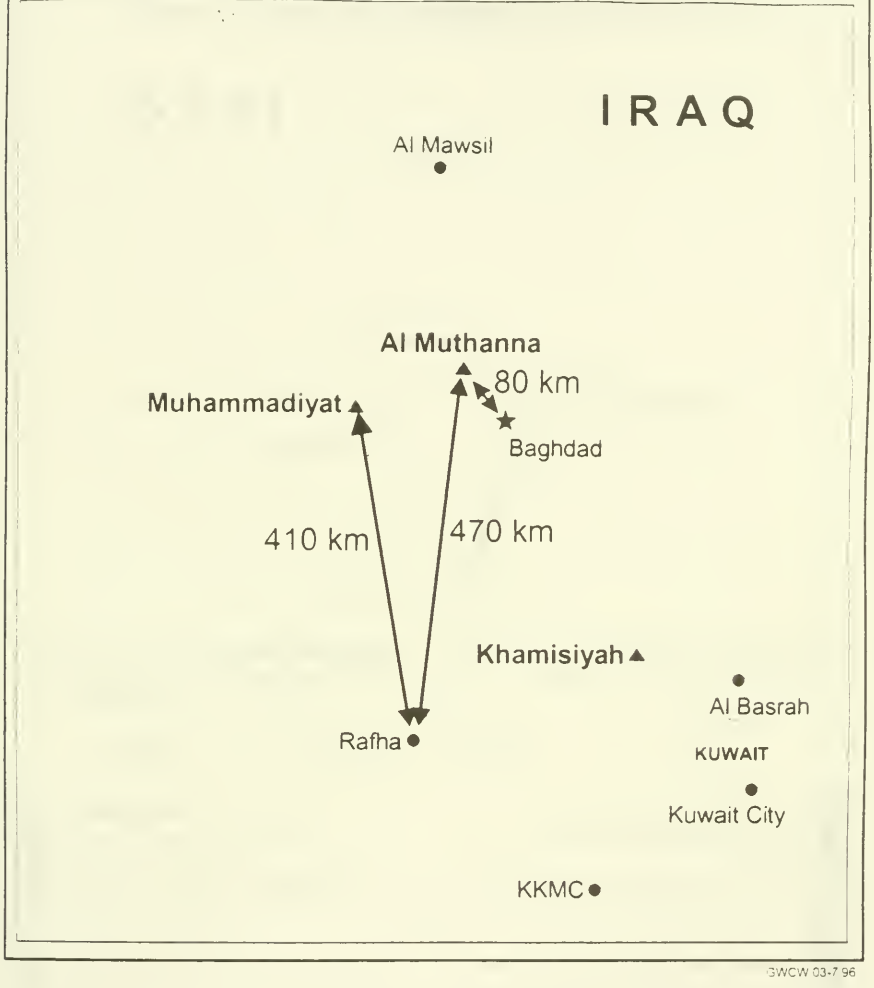
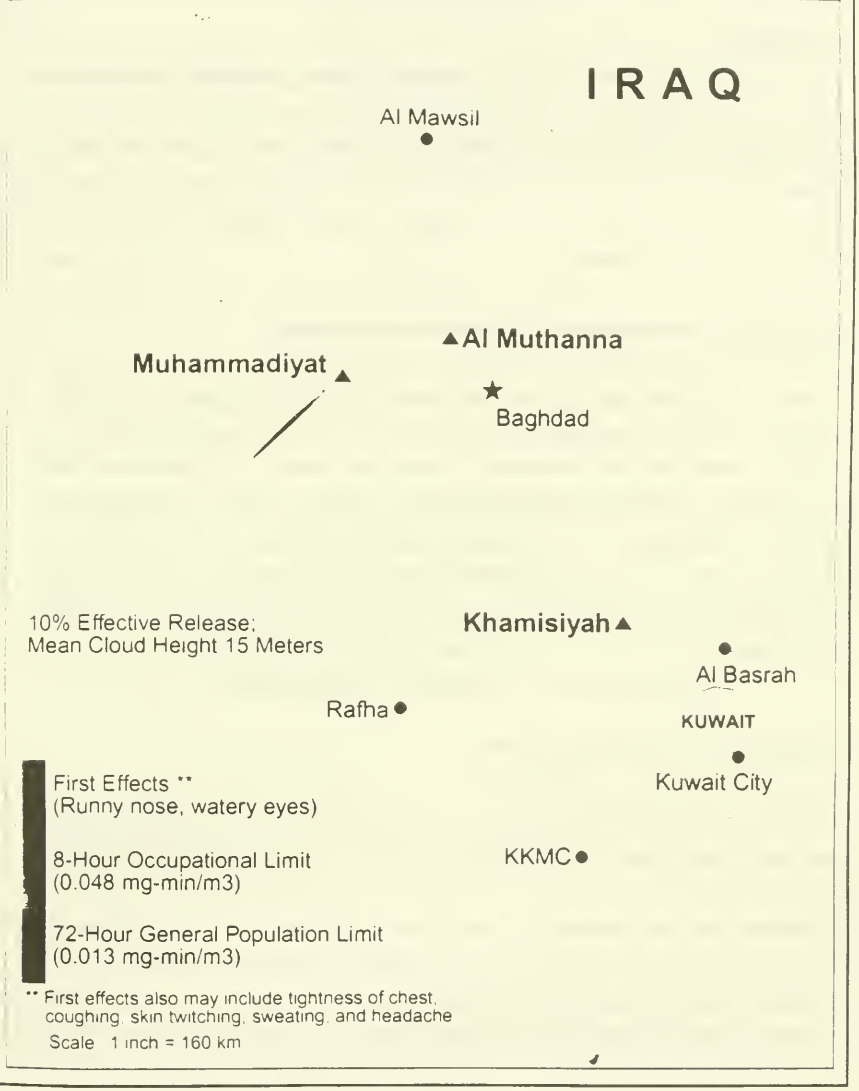


Figure 6. Worst Case Hazard Footprint for 2.9-Metric-Ton Sarin Release at Muhammadiyat Storage Area

GWCW 25-7-96

Figure 7. Worst Case Hazard Footprint for 15.2-Metric-Ton Mustard Release at Muhammadiyat Storage Area



GWCW 07-7 96

Neither the first effects nor the general population limit levels would have reached US troops that were stationed in Saudi Arabia.[4]

Al Muthanna

Iraq declared that 2,500 chemical rockets containing about 17 metric tons of sarin nerve agent at Al Muthanna (US geographic name Samarra), the primary Iraqi CW production and storage facility, had been destroyed by Coalition bombing. UNSCOM inspectors were unable to verify the exact number because of damage to the rockets. We have modeled possible bombing dates for this bunker and determined that the most southerly dispersal for reaching the general population limit dosage is 160 km (figures 8), well short of US troops.

No Evidence of Biological Fallout From Aerial Bombing

There are no indications that any biological agent was destroyed by Coalition bombing. Available intelligence reporting and Iraqi statements indicate that Iraq went to great lengths to protect its biological munitions from aerial bombardment. The Iraqis have stated that its biological-agent-filled aerial bombs were deployed to three airfields well north of the KTO. The bombs were placed in open pits far from bombing targets, then covered with canvas, and buried with dirt. Iraqi biological warheads for Al Husayn missiles were hidden well north of the KTO both in a railroad tunnel and in earth-covered pits at a location near the Tigris canal. The Iraqis admitted to production of biological agents at four sites near Baghdad but said it ceased production before the air war. In addition, UNSCOM found no damage to any of these facilities from Coalition bombing.

Iraqi Chemical and Biological Agents

We found no evidence that would indicate that Iraq developed agents specifically intended to cause the most common types of long-term symptoms seen in ill Gulf war veterans. This finding is important in ruling out the scenario of covert use of such an agent. With the possible exception of aflatoxin, all declared Iraqi agents were intended to cause rapid death or incapacitation. The only documented effects of aflatoxin in humans are liver cancer months to years after it is ingested and symptoms–possibly including death–caused by liver damage from ingestion of large amounts. Effects of aerosolized aflatoxin are unknown. UNSCOM assesses that Iraq looked at aflatoxin for its long-term carcinogenic effects and

[4] When predicting very low concentration levels far downrange of the source, large dispersions are created that are difficult to model. We assess, however, that our results are biased upward because we chose optimal times and dates that would have produced the maximum dispersion toward Saudi Arabia. In addition, the models do not account for phenomena–such as deposition onto the ground and rain removal of agent–that would greatly diminish potential downwind exposure..

that testing showed that large concentrations of it caused death within days. We have no information that would make us conclude that Iraq used aflatoxin or that it was released in the atmosphere when bombing occurred.

Other Potential Hazards

CIA's also reviewed intelligence on potential hazards other than chemical and biological agents. Some of the studied hazards include:

- ***Red Fuming Nitric Acid (RFNA).*** Scud missiles that impacted in Saudi Arabia and Israel each contained approximately 300 pounds of toxic RFNA oxidizer and 100 pounds of kerosene fuel. Although we know of no long-term illnesses related to these chemicals, we assess that RFNA is a likely cause of some of the burning sensations reported by veterans near Scud impacts. DOD's Persian Gulf Investigation Team (PGIT) has been informed of this and is following up to look for long-term symptoms.

- ***Radiological Weapons and Radiation Fallout.*** Although Iraq conducted research on radiological weapons, we assess it never progressed into the developmental phase. Small quantities of radioactive material were released during tests in areas north of Baghdad. These tests took place two years before the Gulf war, and any radioactivity from those tests would have decayed away by the time of the war. In addition, Iraqi nuclear facilities bombed during the Gulf war produced only minimal local contamination north of the KTO, with no releases detected beyond those facilities.

- ***Miscellaneous.*** We have seen a number of reports claiming that veterans were exposed to other hazards including everything from poisoned water supplies to chocolate additives. In examining these reports, we found nothing to corroborate them, but we have made DOD's Persian Gulf Investigative Team aware of them.

Future Efforts

CIA will continue to track any leads that surface in the future and will make our findings available to the public. We will complete our review of the hazards posed by destruction of chemical rockets in the pit area and will publish our findings over the Internet.

STATEMENT

BY

MATTHEW L. PUGLISI, ASSISTANT DIRECTOR
NATIONAL VETERANS AFFAIRS AND REHABILITATION COMMISSION
THE AMERICAN LEGION

TO THE

JOINT SENATE VETERANS' AFFAIRS COMMITTEE AND
THE SENATE SELECT COMMITTEE ON INTELLIGENCE
UNITED STATES SENATE

ON

REPORTS OF EXPOSURES OF US SOLDIERS TO CHEMICAL WARFARE AGENTS DURING THE PERSIAN GULF WAR

SEPTEMBER 25, 1996

MATTHEW L. PUGLISI, ASSISTANT DIRECTOR
NATIONAL VETERANS AFFAIRS AND REHABILITATION COMMISSION
THE AMERICAN LEGION
TO THE
JOINT SENATE VETERANS' AFFAIRS COMMITTEE AND
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REPORTS OF EXPOSURES OF US SOLDIERS TO CHEMICAL WARFARE AGENTS DURING THE PERSIAN GULF WAR

SEPTEMBER 25, 1996

Messrs. Chairmen and Distinguished Members of the Committees:

The American Legion would like to take the opportunity to submit testimony concerning the exposure of US military personnel to low levels of chemical warfare agents during the Persian Gulf over five years ago. We will address the effects that the Department of Defense's inflexible policy concerning these exposures has had on the health care of ill Gulf War veterans, and the research of Gulf War illnesses. We would also like to propose a medical initiative that would address this issue in a manner consistent with the lessons learned from the experience of Vietnam veterans exposed to the herbicide Agent Orange.

The American Legion realizes that today's hearing will focus on Defense Department and intelligence reports of exposure of US soliders to chemical agents during the Persian Gulf War. However, The American Legion would like to recommend that Congress address the inadequacy of the United States military's chemical and biological warfare agent detection and protection capabilities. This national security issue is extremely important to veterans' health issues, especially since DoD has been reluctant to address the "gapping hole" in the nation's chemical and biological warfare defensive capabilities. The American Legion is concerned because DoD continues to purchase and deploy protection and detection equipment which will not fully protect US military personnel from unhealthy low levels of chemical warfare agents. The inadequate chemical warfare protection and detection equipment is currently deployed with US forces in the Middle East, Korea and Bosnia were large stock piles of chemical warfare agents are known to exist.

Over five years ago, while forcefully evicting the world's fourth largest army from Kuwait, American troops were exposed to chemical warfare agents. The evidence of these exposures is overwhelming. DoD, however, continues to insist that American troops were not exposed to chemical warfare agents in the Persian Gulf.

The American Legion can only guess as to the reason for DoD's policy statements. But we do not have to spend much time in determining the effects that DoD's policy has had on the health and well being of Gulf War veterans.

DoD's Comprehensive Clinical Evaluation Program (CCEP), a medical examination program for Gulf War veterans on active duty, diagnoses 18% of its participants with a psychological condition. This can be compared with 7.1% of the general population who seek medical care in the United States (*CCEP Report on 18,598 Participants*, April 2, 1996). Are we to believe that Gulf War veterans on active duty, after passing entrance physicals, psychological screenings, and deployment physicals, are over twice as likely to suffer from a psychological disorder as the average American civilian. DoD has found an epidemic of psychological disorders in its ranks, an epidemic found only among those who come forward with health problems caused by their service in the Persian Gulf.

The group of psychological disorders most commonly diagnosed in the CCEP are Somatoform Disorders. According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (American Psychiatric Association, Washington, DC, 1994), 'the common feature of the Somatoform Disorders is the presence of physical symptoms that suggest a general medical condition, and are not fully explained by a general medical condition [or] by the direct effects of a substance." (American Psychiatric Association, 1994, p. 445) The American Legion believes DoD's policy on exposures has encouraged it's medical doctors to assign Somatoform Disorder diagnoses. One exposure that many Gulf War veterans claim to have encountered, chemical warfare agents, was not present in the Persian Gulf according to DoD. The periodic pronouncements from DoD concerning the nonexistence of 'Gulf War syndrome," combined with it policy on exposures, has created an environment where DoD medical doctors believe that Somatoform Disorders are more common among Gulf War veterans.

One illustrative example of the CCEP and DoD medical doctors' bias is that of a Gulf War veteran from Connecticut. This veteran was diagnosed with between nine and eleven diseases between 1991 and 1994 by the Army, and the Department of Veterans Affairs, after his service as a helicopter pilot during the Gulf War. Yet, when he underwent a CCEP examination during August of 1994, he was diagnosed with Somatization Disorder. That was his only diagnosis. This one example illustrates what DoD's own statistics demonstrate: the CCEP is biased against diagnosing disease in Gulf War veterans who suffer from poor health as a result of their service in the Persian Gulf.

DoD's policy has affected more than today's active duty servicemembers and veterans, and their treatment by DoD medical doctors. It has affected how Gulf War illnesses is being studied, the answers being sought, and our preparedness for future wars.

Exposed to many environmental hazards in the Gulf to include: smoke from oil well fires; investigational medications; indigenous parasites; organophosphate pesticides, and stress, thousands of Gulf War veterans have complained of poor health since their return from the Gulf. Their complex of health complaints has become popularly known as 'Gulf War syndrome." One, many or all of the environmental hazards American troops were exposed to in the Gulf could be the cause, of this illness, or illnesses. Dozens of well designed scientific studies are underway to determine the role of these hazards in Gulf War

illnesses. One environmental hazard, however, is not currently under study. That one hazard is low level chemical warfare agent exposure, its association with Gulf War illnesses, and with disease in general. It is not being studied because the Department of Defense has insisted that no American troops were exposed.

Due to lack of coordination between the three federal agencies most responsible in determining the definition and etiology of Gulf War illnesses, DoD, VA and the Department of Health and Human Services created the Persian Gulf Veterans Coordinating Board. The Coordinating Board is responsible for selecting scientific studies that examine the relationship between service in the Persian Gulf and illness in Gulf War veterans. The Coordinating Board reviewed proposals this past winter, proposals from respected scientists from around the nation, who wanted to examine specific exposures to American troops in the Persian Gulf, and these exposures' association with disease. Proposals for studies examining low level exposures to chemical warfare agents and disease were not funded because DoD insisted that such exposures did not occur. We have now learned that Gulf War veterans were right all along, and that these exposures did occur. As of today, however, none of these studies are being funded, or are underway.

DoD's position has also prevented the scientific study of this issue by the federal government. The federal government is conducting dozens of scientific studies of its own that have been underway for over a year. None of these studies are examining the association between low level chemical warfare exposure and disease except one, and that is in spite of DoD's policy.

In 1995, The Department of Veterans Affairs' Portland Environmental Hazards Center proposed to the Coordinating Board that it conduct a study examining the association between nerve agents and disease, but were dissuaded after the National Institutes of Health Panel, in 1994, concluded that such exposures did not occur. The NIH Panel based its conclusion solely on reports from DoD about such exposures. Today, we are all well aware of the credibility and validity of DoD's prior reports concerning these exposures. Portland did display some independence by choosing to study the association between mustard gas and disease because, they concluded, DoD could not detect it well with its equipment, and therefore, could not make reasonable claims that such exposures did not occur (Testimony of Dr. Peter S. Spencer, Ph.D., FRCPath, before the Presidential Advisory Committee on Gulf War Veterans' Illnesses in Boston, MA March 26, 1996).

Clearly, DoD's inflexible policy concerning exposures has adversely affected the medical care of Gulf War veterans, and the scientific study of Gulf War illnesses. DoD coming forward with information it has possessed for over five years, after denying that this information existed, is shameful after one assesses the damage that their actions, or lack of action, has done. Worst of all, after determining that as many as 5,000 Gulf War veterans may have been exposed to chemical warfare agents near the Kamisiyah bunker alone, DoD proposes that these veterans seek CCEP examinations. These are the same exams that diagnose Gulf War veterans with psychological conditions at twice the national average.

Clearly, DoD's reaction to its recent admissions falls far short of the mark for Gulf War veterans.

The American Legion does not offer this testimony merely to point out problems. We offer this testimony with a solution that will address this issue in a bold manner, based on sound science and medicine. We offer it in light of the lessons we all have learned from our experience with veterans exposed to Agent Orange. The American Legion proposes the following:

1. The Department of Veterans Affairs should collect tissue samples (blood and fatty tissue) from those believed to have been exposed to chemical warfare agents in the Persian Gulf. Participation would be voluntary, however, it would be encouraged through extensive and comprehensive outreach. The tissue samples would be stored so that well designed studies could occur in the future to determine the existence of markers in those exposed to such agents.

2. Congress should establish a commission to investigate American troops' exposure to chemical and biological warfare agents during or as a result of the Gulf War. This commission would also monitor the collection of tissue samples from those suspected of exposure, the storage of these samples, and the approval of any methods for examining these samples in the future.

This recommendation is consistent with the one offered to the Presidential Advisory Committee on Gulf War Veterans' Illnesses by its staff on September 5, 1996. The staff noted that DoD's policy and approach to chemical and biological warfare agent exposure in the Persian Gulf has so undermined its credibility that an independent commission should be created to investigate the issue. We recommend not only the creation of the commission, but that it oversee the tissue collection effort.

Previous experience compels us to recommend the collection, storage and later re-examination of these tissue samples. Despite early, widely quoted negative scientific publications, retrospective estimates of exposure for both Ranch Hands and Vietnamese civilians correlated reasonably well with recently developed biological markers. Such markers and exposure estimates provide scientific strength to epidemiological studies, even though specimens were not collected until ten years later. These results raise the question whether biological specimens should be collected, stored, frozen in liquid nitrogen, under the assumption that biological markers will be determinable at some future date.

Of importance to The American Legion, the federal government, and Gulf War veterans is the implication of improved exposure assessment. Because of the length of time since their most recent exposure, exposure assessment of Vietnam veterans will remain difficult: no tissue bank was established. This fact, and the recent scientific developments concerning the identification of biomarkers due to past exposure to chemicals makes the case that Gulf War veterans should have tissue and blood stored. This would allow at

some time in the future documentation or validation of exposure if a biological marker is identified. Early attempts at developing such markers are underway. Human subjects considerations become of great interest and may generate controversy. Stored samples of biological tissue may be examined for the substance of interest to exposure assessment but, at least theoretically, also for other substances such as drugs of abuse or for genetic testing. These latter two may generate appropriate concerns for protection of privacy. The commission proposed above would oversee the handling and testing of these samples, alleviating the privacy concerns of the participants.

Tissue sampling will assess exposure levels without any smoke and mirrors from any group or federal agency. The federal government, and the Congress, want what is best for our veterans, while they wisely spend the taxpayers' money. Tissue sampling will one day help determine who was exposed to chemical warfare agents in the Persian Gulf, and at what levels they were exposed. In conjunction with well designed scientific studies that examine the relationship between low level exposure to chemical warfare agents and disease, we will be able to determine who from the Gulf War was exposed, and know what effects that exposure has, or will have. We may also be able to treat these veterans at some future date based on this research.

Looking to the future, we have not seen the last of American troops and chemical warfare agents. Unless the U.S. withdraws completely from the world, its troops will once again face an adversary armed with chemical warfare agents. Now is the time to address the lack of preparedness to fight such an adversary, and maintain the health of the troops that do the fighting. Congress has an opportunity to address future challenges to tomorrow's veterans, today. The American Legion encourages you to do so.

DEPARTMENT OF VETERANS AFFAIRS
UNDER SECRETARY FOR HEALTH
WASHINGTON DC 20420

JAN 21 1997

The Honorable Arlen Specter
Chairman
Committee on Veterans' Affairs
United States Senate
Washington, DC 20510

Dear Mr. Chairman:

I am writing in response to former Chairman Alan K. Simpson's October 28, 1996, letter regarding my appearance before the Senate Committee on Veterans' Affairs on September 25, 1996. As you requested, answers to the Committee's additional questions are provided below.

Question 1: The VA set up the Persian Gulf Registry to record the many ailments of Persian Gulf War veterans. In your opinion, how well has the Registry helped the VA in its treatment of Persian Gulf War veterans?

Response: U.S. troops returning from Operations Desert Shield and Desert Storm began reporting a variety of illnesses which they initially attributed to inhalation of fumes and smoke from burning Kuwaiti oil-well fires. In August 1992, in response to these veterans' health concerns, VA initiated a health surveillance system, the Persian Gulf Registry Health Examination Program.

The Persian Gulf Registry Health Examination Program offers a free, complete physical examination with basic laboratory studies to any Persian Gulf veterans. A complete medical history and interview are also performed and documented in the veteran's medical record. To date, more than 62,000 veterans have responded to VA's outreach encouraging them to participate. VA maintains a centralized registry, or list of participants who have had these examinations. This clinical database is called the Persian Gulf Veterans Health Registry. Specifically, the Registry:

- allows VA to communicate with Persian Gulf veterans by informing them of new programs, research findings, or compensation policies through periodic newsletters;

- helps VA respond to veteran's health concerns;

2.

The Honorable Arlen Specter

- provides a surveillance mechanism to catalogue prominent symptoms and diagnoses; and

- allows VA to concentrate education efforts on a special group of administrative coordinators and Registry physicians. Each VA medical facility has a designated coordinator and Registry physician who act as a source of information to veterans and other VA healthcare providers.

In sum, I believe it has been of substantial benefit to us in treating these veterans.

Question 2: Of the symptomatic Persian Gulf veterans on the Registry, do you know how many are claiming their symptoms are related to low-level chemical exposures?

Response: The self-reported exposure history of 758 veterans on VA's Revised Persian Gulf Registry computer database shows 11% who reported that they believed they had exposure to nerve gas, 25% reported they had not been exposed to nerve gas, and 64% did not know if they had been exposed to nerve gas. Six percent of this group reported a belief that they were exposed to mustard gas, 37% reported they had not been exposed to mustard gas, and 57% did not know if they had been exposed to mustard gas. While the original registry code sheet did not track veteran reported exposures, the revised questionnaire has been mailed to the approximately 53,000 veterans who received examinations prior to the revision. This information will be incorporated into the computerized database.

Question 3: The Department of Defense is developing a Geographic Information System (GIS). It will be a comprehensive registry of troop movement during the Persian Gulf War. It will be an immensely important tool in identifying legitimate exposures and legitimate service-connected disability claims. Do you have any research studies that await completion of GIS? Have the DoD and VA developed a protocol by which VA researchers can have access to the GIS?

Response: VA investigators with Internal Review Board (IRB)-approved research projects have access to information currently available from the GIS. There is good cooperation between VA and the GIS team. VA's Boston Environmental Hazards Research Center has already been granted access to GIS information. VA does not have any research studies that await final completion of the GIS database. The value of the GIS data is limited because it does not contain information on location of individual soldiers or location information before January 1991.

3.

The Honorable Arlen Specter

Question 4: The VA has completed the first phase of the "National Health Survey of Persian Gulf Veterans and Their Families." The VA mailed out a postal survey to 15,000 Gulf War veterans and 15,000 Gulf era veterans. I understand that the response rate to the initial mail survey was 56 percent. What are your impressions as to why 44 percent of those contacted did not respond to the mail survey? Did the VA have current addresses causing the surveys to be "Returned to Sender"? Or is there a tendency for healthy veterans not to respond to the survey? I would believe a healthy veteran would be less likely to respond to the survey than a sick one.

Response: The percentage of veterans completing and returning the "National Health Survey of Persian Gulf War Veterans and Their Families" is typical of the expected response rate to mail surveys of this type. We agree that healthy individuals would be less likely to complete the Phase I questionnaire than people who are ill. Also, non-Persian Gulf veterans are probably less likely to respond to the survey than those who actually served in the Persian Gulf.

The Phase II, a telephone follow-up survey to non-respondents, is designed to correct for and assess the degree of bias introduced by non-response. This phase of the National Survey is currently underway.

VA utilized various databases, including VA and Internal Revenue Service (IRS) sources, to provide the addresses used for the questionnaire mailing labels. In addition, the investigators engaged an outside contractor to locate the addresses of individuals whose surveys were returned to us stamped "Returned to Sender." Despite these efforts approximately 5% of the questionnaires were still returned by the U.S. Postal Service due to incorrect addresses. Another outside contractor will conduct telephone interviews with the 8,000 veterans who did not respond to the mail questionnaire, as part of Phase II of this project.

Thank you for the opportunity to provide additional information on these important issues. Please contact me if you should require any further assistance.

Sincerely yours,

Kenneth W. Kizer, M.D., M.P.H.

Department of Veterans Affairs

ANNUAL REPORT TO CONGRESS

Federally Sponsored Research on Persian Gulf Veterans' Illnesses for 1995

The Research Working Group of the Persian Gulf Veterans Coordinating Board

Table of Contents

INTRODUCTION

On August 31, 1993, in response to Public Law 102-585, President Clinton named the Department of Veterans Affairs (VA) as the lead agency for research into the health consequences of service in the Persian Gulf War. As part of its role as the lead research agency VA is required to submit to Congress an annual report on the results and progress of *federally funded* research on Persian Gulf veterans' illnesses. This is the third of these annual reports. Because this document is a status report, and because it is restricted only to federally funded research, it does not attempt to interpret the aggregation of current research findings.

In addition to the research efforts highlighted in this report, there have been several noteworthy research efforts in the private sector. Most recently, studies of infectious agents, pyridostigmine bromide, and other clinical issues have been reviewed by the Persian Gulf Veterans Coordinating Board. VA, DOD, and HHS senior clinical and research managers have met with interested non-federal investigators to be fully informed on (their) study outcomes. However, these private sector research efforts are not included in this report because this document is a status report on the *federally funded* research on Persian Gulf Veterans Illnesses.

This report is divided into four sections. The first section discusses the management of federal Persian Gulf veterans' illnesses research programs, including research oversight, peer-review and coordination. The following section highlights significant research events and milestones in the last year. The next section summarizes the status and results from several important research projects and programs of the federal government (Appendix C contains a comprehensive listing of all research projects and programs conducted or sponsored by the federal government). The final section lists significant milestones anticipated for 1996.

RESEARCH MANAGEMENT

Overview of Research Management

Research on Persian Gulf veterans' illnesses is complex, involving a number of different approaches and outcomes. The federal research enterprise involves scientists conducting research sponsored by VA, the Department of Defense (DOD), and the Department of Health and Human Services (HHS). Each of these Departments have distinct, though complementary, capabilities and capacities for conducting and sponsoring research on Persian Gulf veterans health issues. Each Department has its own appropriation for extramural and intramural general biomedical research programs. The Department of Defense also has a separate item in its appropriation for DOD/VA collaborative research on health problems shared by veterans and active duty service members alike.

The biomedical research programs in VA, DOD, and HHS have well established management structures for science policy formulation and the solicitation, scientific peer review, and funding of both extramural and intramural programs. The coordination and management of research on Persian Gulf veterans' illnesses has required the establishment of an overall research policy framework linking each Department's research management

hierarchy. The link ge is provided through the Research Working Group of the Persian Gulf Veteran's Coordinating Board As an operation policy, the Research Working Group works through the line management authority each department maintains over its intramural scientists, scientific program managers (responsible for extramural research), and their budgets

Oversight of Research

Each Department engaged in research on Persian Gulf veterans' illnesses emphasizes the need for both prospective and retrospective peer review of research Because of the urgency of the health concerns of Persian Gulf veterans and their families, as well as the diverse nature of the reported illnesses, review and oversight of research is essential. VA, DOD, and HHS have established multiple oversight mechanisms to capture the diverse nature of the overall effort, some oversight mechanisms are broad-based, encompassing all research issues, whereas others are more focused on individual research projects and programs

Institute of Medicine/Medical Follow-up Agency (under contract to VA and DOD): Health Consequences of Persian Gulf Service

In 1993 VA and DOD jointly entered into a 3 year contract with the Medical Follow-Up Agency (MFUA) of the Institute of Medicine (IOM), National Academy of Sciences (NAS) The IOM was charged with reviewing existing scientific, medical and other information on the health consequences of military service in the Persian Gulf area during the Persian Gulf War. The IOM was also to review the research activities and plans of the various involved agencies and make recommendations The IOM Committee on the Health Consequences of the Persian Gulf War released its interim report in January 1995 (IOM. 1995) and will make its final report in September 1996

In its Interim Report, the IOM made several recommendations to VA and DOD to improve their research programs on Persian Gulf veterans' illnesses. In testimony delivered on March 11, 1996 to the Subcommittee on Human Resources and Intergovernmental Relations of the House Committee on Government Reform and Oversight, Dr. John Bailar, Chairman of the IOM Committee on the Health Consequences of the Persian Gulf War, stated that VA and DOD "...have largely acted in accord with our recommendations, and I am personally pleased with the progress that has been made to date "

Department of Veterans Affairs: Persian Gulf Expert Scientific Committee

In late 1993 VA chartered this standing federal advisory committee at the request of VA Secretary Jesse Brown The purpose of the VA Expert Scientific Committee is to advise the VA Under Secretary for Health and the Assistant Chief Medical Director for Public Health and Environmental Hazards on medical findings affecting Persian Gulf veterans The Committee also reviews research activities The Committee consists of 18

members selected on the basis of high professional achievement, expertise in illnesses which might be related to Persian Gulf service, and research expertise in these areas. The Committee has met seven times since early 1994 and has heard presentations from numerous scientists and clinicians. Tne deliberations of the Committee have provided a continuous review of VA clinical and research programs.

Executive Office of the President: Presidential Advisory Committee on Gulf War Veterans' Illnesses

The President established this advisory committee by Executive Order on May 26, 1995. The 12 member committee is composed of scientists, health care professionals, veterans, and policy experts. The Committee is charged with reviewing and providing recommendations on the full range of government activities relating to Persian Gulf veterans' illnesses. The full Committee has met five times and subcommittees reviewing clinical and research issues have met three times. Each meeting has had public comment periods and invited presentations from clinicians, scientists, veterans, and government officials.

The Committee released an interim report in February 1996 Although the Interim Report stated that VA, DOD, and HHS research programs are generally well designed and should lead to answers, it also had several recommendations. The Committee's recommendations covered issues such as peer review, coordination of agency research activities, the use of public advisory committees and the availability of information on troop exposure. The agencies have developed a coordinated plan of action (The Persian Gulf Veterans Coordinating Board, 1996) that responds to the Advisory Committee's interim recomendations The agencies will also respond to the recommendations contained in the final report, which is scheduled for release in December 1996.

Other Oversight

In addition to the broad oversight provided by the three committees cited above, there are several standing and special committees responsible for oversight on individual research projects and programs Projects and programs receiving continuous or ad hoc oversight include.

- The National Health Survey of Persian Gulf Veterans (VA)
- Epidemiologic Studies of Morbidity Among Gulf War Veterans: A Search for Etiologic Agents and Risk Factors (DOD)
- Health Assessment of Persian Gulf War Veterans from Iowa (HHS)
- Each of the three Environmental Hazards Research Centers (VA)

Research Coordination

In 1993, VA, DOD, and HHS recognized the importance of a coordinated approach to research on Persian Gulf veterans' illnesses In response to this need the three Departments formed the "Persian Gulf Interagency Research Coordinating Council".

By January 1994, when the Secretaries of V. , DOD, and HHS formed the Persian Gulf Veterans Coordinating Board, the Council became the Research Working Group operating under the auspices of the Coordinating Board (Beach et al, 1995). Because of the potential link between environmental factors and Persian Gulf veterans' illnesses, the Environmental Protection Agency was asked to be a member of the Research Working Group

The Research Working Group is charged with assessing the state and direction of research, identifying gaps in factual knowledge and conceptual understanding, identifying testable hypotheses, identifying potential research approaches, reviewing research concepts as they are developed, collecting and disseminating scientifically peer-reviewed research information, and insuring that appropriate peer review and oversight are applied to research conducted and sponsored by the federal government Membership on the Research Working Group consists of senior research and clinical managers from VA, DOD, HHS, and EPA To carry out this function, the Research Working Group meets at least monthly

EVENTS AND MILESTONES IN 1995

Development of A Working Plan for Research of Persian Gulf Veterans' Illnesses

Assessments in 1994 of existing knowledge and data by the Defense Science Board Task Force (DSB), a National Institutes of Health Technology Assessment Workshop (NIH, 1994), and the National Academy of Sciences/Institute of Medicine/Medical Follow-up Agency (IOM) led the Research Working Group to the conclusion that significant investments in research would be required to ascertain the nature, extent, and causes of illnesses among veterans of the Persian Gulf War. Although close coordination of research activities were taking place among investigators in VA, DOD, and HHS, it was determined that a written research plan encompassing the Federal research effort needed to be developed If constructed properly, such a research plan would ensure that appropriate research questions are addressed, while at the same time avoiding unnecessary duplication In 1995 a subcommittee of the Research Working Group was formed to draft *A Working Plan for Research on Persian Gulf Veterans' Illnesses*. The members of this subcommittee were senior research and clinical managers with expertise in clinical research, epidemiology, and toxicology. The final research plan was approved by the full membership of the Research Working Group and concurred upon by top management of VA, DOD, and HHS in August 1995.

As a starting point the subcommittee examined the valuable data assessments and research recommendations developed by the Defense Science Board Task Force (DSB, 1994), the NIH Technology Assessment Workshop (NIH, 1994), and the Institute of Medicine (IOM, 1995).

In defining the course of research three goals for research were established

1 Establishment of the nature and prevalence of symptoms, diagnosable illnesses and unexplained conditions among Persian Gulf veterans in comparison with appropriate control populations;

2. Identification of possible risk factors for any illnesses found among Persian Gulf veterans;

3. Identification of appropriate diagnostic tools, treatment methods, and prevention strategies for illnesses found among Persian Gulf veterans.

To the extent appropriate and feasible, these goals would also apply to veterans' family members.

The overall approach to development of the plan involved: identification of the knowledge required to reach the above goals; identification of the knowledge either currently available or obtainable from ongoing research programs; and lastly identification of additional research areas necessary to close the gap between what is known and what is needed. In identifying the required knowledge, the subcommittee developed a set of 19 research questions. The first research question set the stage for all others: *What is the prevalence of illnesses (manifested by signs and/or symptoms) in the Persian Gulf veterans population? How does this prevalence compare to that in an appropriate control group?*

Illnesses occur in any population over time, but it is currently not known whether Persian Gulf veterans are experiencing illnesses beyond those expected in such a population of relatively young, fit men and women. The Persian Gulf registries of both VA and DOD cannot alone answer this question. The registries are important tools for observing trends in reported symptoms and illnesses, and for developing research questions. As the research plan identifies, there are several ongoing and planned epidemiologic investigations that address this question. Important among these are the VA National Health Survey, the VA Mortality Study, the epidemiologic studies of the Naval Health Research Center in San Diego, and the CDC studies of Iowa veterans and Pennsylvania Air National Guardsmen.

If these studies demonstrate in aggregate an increased prevalence of illnesses, then secondary questions regarding disease entity or entities must be addressed. The plan identifies 18 secondary questions. The questions are divided between exposure-related questions and health outcome-related questions. This was done to isolate two broad, interconnected questions: (1) what was the nature and extent of *possible exposures* experienced by veterans while in the Persian Gulf? and (2) what specific adverse health outcomes have occurred among Persian Gulf veterans, beyond those normally expected in such a large adult population? These two questions lead to a third question, namely: (3) is there a relationship, or set of relationships, between exposure to the complex environment of the Persian Gulf theater and any *excess* morbidity and mortality from epidemiological data that is consistent with established biological and toxicological principles? This last question needs to be addressed by investigating both exposures and health outcomes. Investigations of exposures can lead to hypotheses about expected health outcomes based on the nature and extent of the exposures, and investigations of health outcomes can lead to hypotheses about exposures.

The exposure-related questions and the outcome-related questions were generated in large measure by a critical examination of the findings of the DSB (DSB, 1994), NIH (NIH, 1994), and IOM (IOM, 1995) panels. This approach was important and was

endorsed by the Research Working Group. It built on the very substantial intellectual and financial capital invested in these three distinguished panels.

The subcommittee first categorized the exposure and outcomes areas of concern considered by the panels. Exposure areas of concern identified by the three panels were:

Infectious agents
Smoke from oil well fires/oil spills
Other petroleum product exposures
Other occupational exposures
Potential chemical and biological warfare agents
Vaccines
Pyridostigmine bromide
Psychological stressors of war

Health outcomes of concern identified by the three panels were:

Non-specific symptoms/symptom complexes
Immune function abnormality
Reproductive health outcomes
Genitourinary disorders
Pulmonary function abnormalities
Neuropsychological outcomes
Leishmaniasis
Neoplastic disease
Mortality outcomes

The subcommittee then assessed the importance placed on each area of concern by the three panels. Areas of clear consensus among the panels on exposures and outcomes were identified and issues for future research were then prioritized based on scientific merit. In areas of disagreement among the panels the subcommittee discussed the scientific merits of each view and made a decision as to its priority. Generally, the subcommittee included most exposure and outcome areas where the panels disagreed. Not all areas were considered by all panels. In such cases an inclusive view also prevailed.

The individual research questions are enumerated in the *Working Plan* (Appendix A). Many of these research questions are being addressed by ongoing research and much of that research is focused appropriately along epidemiological lines. The research plan delineates some specific areas of inquiry needing special emphasis:

- Information on the prevalence of illnesses and diseases within other coalition forces,
- Information on the prevalence of symptoms, illnesses and diseases within indigenous populations living in the Persian Gulf area, including Saudi Arabia and Kuwait,
- Information on the prevalence of adverse reproductive outcomes among Persian Gulf veterans and their spouses;
- Simple and sensitive tests for *L. tropica* infection that could lead to quantitation of the prevalence of *L. tropica* infection among Persian Gulf veterans; and

- Information on the long-term, cause-specific mortality among Persian Gulf veterans.

The research plan was released publicly on August 4, 1995. It has received broad distribution, including publication on DOD's Gulflink home page on the World Wide Web.

DOD/VA Solicitation of New Research Projects

The areas of specific inquiry identified at the end of the *Working Plan* were used by DOD in a solicitation for proposals contained in a Broad Agency Announcement in June 1995. Over 100 proposals were reviewed for scientific merit by external peer-review panels. After ratings were assigned by the peer-review panels, summary review statements (redacted for investigator and institutional identifiers) were provided to a subcommittee of the Research Working Group (some subcommittee members were government officials from outside of the Research Working Group) for the purpose of evaluating proposals for their relevancy to the research needs established by the *Working Research Plan*. The subcommittee was not responsible for any further scientific review, and relied on the scientific merit scores established by the independent, scientific peer-review panels. The overall goal of the subcommittee was to identify the proposals that had the highest scientific merit and met the research needs established in the *Working Research Plan*. The subcommittee developed its recommendations and provided them to the Research Working Group for endorsement. The Research Working Group transmitted the recommendations to DOD through the Persian Gulf Veterans Coordinating Board. The Department of Defense is currently finalizing negotiations with the offerors. By the end of negotiations, it is anticipated that approximately 12 new research projects will be funded.

Meeting of Researchers at Armed Forces Institute of Pathology

The Research Working Group of the Persian Gulf Veterans Coordinating Board organized an informal meeting of federal government scientists and federally sponsored scientists engaged in research on Persian Gulf veterans' illnesses. The meeting took place on June 14-15, 1995 at the Armed Forces Institute of Pathology. The purpose of the meeting was to provide scientists with a forum at which they could informally share problems, concerns, areas of commonality, and preliminary findings.

The first morning of this two day meeting was devoted to presentations on ongoing research related to the health of Persian Gulf veterans. Following the presentations, participants were broken into three working groups: epidemiology, toxicology, and clinical research. The groups were charged with discussing the major issues with each of the working group areas. Groups were asked to document their discussions and present any recommendations to the whole assembly.

The meeting was an important step in bringing researchers together to help ensure overall coordination of the federal research effort.

Meeting of the American Public Health Association

A session of the Annual Meeting of the American Public Health Association (APHA) was devoted to epidemiologic research on Persian Gulf veterans' illnesses. The Meeting was held October 31 in San Diego, CA. Twelve papers on Persian Gulf veterans' illnesses were presented which included preliminary results of completed investigations and methodological approaches to planned and ongoing studies. Appendix D contains the abstracts of these presentations. Some of the preliminary results presented at the APHA are described in the section on research status.

Milestones in Three Major Epidemiologic Research Efforts

VA National Health Survey of Persian Gulf Veterans

The data collection phase of the VA National Health Survey of Persian Gulf Veterans began in 1995. The survey underwent extensive peer-review from a subcommittee of VA's Expert Scientific Panel, and was further reviewed by the Office of Management and Budget. Details of the survey are provided below.

Survey questionnaires were sent to 30,000 Persian Gulf veterans in November 1995. A second follow-up mailing was sent out in January 1996. This phase of the National Health Survey should be complete by May 1996. VA plans to conduct two more phases of the study, a telephone interview and physical examinations, and hopes to complete the National Health Survey by Spring 1998.

The Health Assessment of Persian Gulf War Veterans from Iowa

Data collection has begun on a telephone survey of self-reported health assessments in a stratified random sample of approximately 3000 Iowa veterans divided into four study groups: active duty service members deployed to the Persian Gulf; National Guard and reserve service members deployed to the Persian Gulf; non-deployed active duty service members of the Persian Gulf era; and non-deployed National Guard and reserve service members of the Persian Gulf era. Results from this study are expected by Summer 1996. This program is being conducted by the Iowa Department of Public health in conjunction the University of Iowa through a cooperative agreement with the CDC.

Epidemiologic Studies of Morbidity Among Gulf War Veterans: A Search for Etiologic Agents and Risk Factors

This large program is being conducted by the Naval Health Research Center. Overall, seven epidemiologic studies are underway. Study 1 is a cross sectional study of 1,500 Seabees (Navy construction workers) that compares post-war morbidity among those who were deployed to a non-deployed control group. Study 2 is a comparative study of DOD hospitalization records for deployed and non-deployed active duty personnel from the Persian Gulf era. About 1.2 million service members are involved in this review of hospitalization records which compares the hospitalization experience

between deployed and non-deployed active duty personnel from the Persian Gulf era. Study 3 utilizes the same data base as study 2 to compare birth outcomes in spouses of active duty service members deployed to the Persian Gulf with non-deployed service members. Study 4 is a survey of married couples in which at least one spouse was deployed during the Persian Gulf War. The survey is intended to ascertain pregnancy outcomes (premature birth and spontaneous abortions) and reproductive success (infertility). Approximately 21,000 couples will be surveyed. Study 5 is a large-scale survey of all 17,000 Seabees who were on active duty during the Persian Gulf War, including those who have left military service. The objective is to identify any latent health effects among Persian Gulf veterans. Study 6 is a study of hospitalization records in non-federal hospitals in California as a measure of health in those who have left military service. Study 7 is an examination of several state birth defects registries to compare the rate of birth defects in offspring of deployed Persian Gulf veterans (spouses) with that in offspring of non-deployed Persian Gulf veterans.

STATUS OF COMPLETED AND ONGOING RESEARCH

Overview

Appendix B comprises the current contents of the Persian Gulf Veterans' Research Database. This database was last updated during the first quarter of FY'96. Research projects are grouped according to the Department that is responsible for the conduct or sponsorship of the research.

Each entry in the database includes:

Project Title
Responsible Federal Agency
Study Location
Project Start-up Date
Project Completion Date (estimated if ongoing)
Overall Objectives of Project
Specific Aims of Project
Methods of Approach
Expected Products (Milestones)
Current Status/Results
Publications

Virtually all current federal research directly related to Persian Gulf veterans' illnesses is sponsored by VA, DOD, or HHS. These three Departments currently sponsor 69 distinct research projects on Persian Gulf veterans' illnesses, of which 51 are ongoing, and 18 are complete*. This does not count the approximately 12 new research programs to be funded by DOD as a result of a Broad Agency Announcement issued last year. Nor does it count research proposals currently before VA's Medical Research Service Merit Review Committee. VA alone is conducting or sponsoring 35 projects, of which 27 are

* A project is considered *complete* when all data have been collected and analyzed. There will be a delay between completion and publication of results to allow for adequate scientific peer-review.

ongoing and 8 are complete Most of the large research projects and programs, such as the large epidemiology studies and VA's three Environmental Hazards Research Centers (encompassing 14 projects alone), involve some participation of VA, DOD, HHS, and EPA

The scope of the federal research portfolio is very broad. In size, projects range from small pilot studies utilizing limited or no direct appropriated research funds, up to large-scale epidemiology studies and major research center programs utilizing significant amounts of appropriated research funds.

The areas of current research focus are categorized as follows:

- **PREVALENCE AND RISK FACTORS FOR SYMPTOMS AND ALTERATIONS IN GENERAL HEALTH STATUS**
- **BRAIN AND NERVOUS SYSTEM FUNCTION**
- **ENVIRONMENTAL TOXICOLOGY**
- **REPRODUCTIVE HEALTH**
- **DEPLETED URANIUM**
- **LEISHMANIASIS**
- **IMMUNE FUNCTION**
- **PYRIDOSTIGMINE BROMIDE**
- **MORTALITY EXPERIENCE**
- **MISCELLANEOUS**

Within each of these focus areas there may be several different approaches. Approaches range in type from basic research, addressing potential biological mechanisms of causation, to clinical and epidemiological research that attempts to ascertain illness prevalence and risk factors Although precise categorization of research types can be difficult because of overlapping methodologies, Persian Gulf veterans' illnesses research projects can be divided into the following general types:

BASIC RESEARCH: encompasses research into mechanisms of disease using *in vitro* and *in vivo* models in humans and laboratory animals

CLINICAL RESEARCH: application of an intervention, such as in a controlled drug trial

CLINICAL EPIDEMIOLOGY: uses epidemiological techniques focused on specific disease or syndrome outcomes Most case-control studies fall under this category

EPIDEMIOLOGY RESEARCH: includes population-based studies focused on outcomes such as mortality, symptoms, hospitalizations, etc., using devices such as postal surveys, telephone interviews, and records reviews.

APPLIED RESEARCH: application of known scientific principles to a specific objective such as vaccine or drug development.

Appendix B classifies all research projects by focus area and within each focus area by the type of approach. At the end of Appendix B Gant charts are provided graphically depicting the projected timelines on cataloged research projects. It should be emphasized that these timelines represent current projections and are subject to change.

The Persian Gulf Veterans' Illnesses Research Database catalogs only research which is deemed to be directly related to the health problems of Persian Gulf veterans. The database takes no account of the vast accumulated knowledge derived from the nation's investment in the biomedical research enterprise of the last 40 years.

Lastly, the Persian Gulf Veterans' Research Database only contains research that is federally sponsored. This includes research conducted by federal scientists, as well as that by non-federal scientists supported by federal research funds through grants and contracts It is not possible to ensure that all research efforts are tracked that fall within the private sector or otherwise outside of the purview of the federal government. Notwithstanding, the Research Working Group attempts to stay abreast of all research relevant to Persian Gulf veterans' illnesses The Research Working Group accomplishes this by monitoring the peer reviewed published scientific literature, attending scientific meetings, and even using newspaper reports and word-of-mouth The Research Working Group has used these methods to identify researchers, for example, from M.D Anderson Cancer Center in Houston, Texas, Duke University in Durham, North Carolina; and the University of Texas Southwest Medical Center in Dallas, Texas who are conducting non-federally sponsored research related to Persian Gulf veterans' Illnesses. Investigators from these institutions were invited and presented their research to the Research Working Group in Washington, D.C. during 1995.

Regardless of the entity that supports particular research projects, <u>all</u> research that has undergone rigorous peer review and has been published in peer reviewed scientific literature will ultimately be used in formal assessments of nature and cause(s) of Persian Gulf veterans' illnesses

Noteworthy Research Results

In the prior year there have been several research projects which have begun to produce results that provide a preliminary, albeit tentative, view of the health problems of Persian Gulf veterans. This section provides brief descriptions of these research projects and their results Publications resulting from these projects are listed in Appendix E and copies of key peer reviewed papers are in Appendix F. Some preliminary results of several research projects were presented at the Annual Meeting of the American Public Health Association (APHA) held in San Diego, CA, in October 1995.

It must be stressed that results from each one of these projects alone cannot be used to draw generalizable conclusions regarding the health of Persian Gulf veterans and their family members. Each study has addressed, or is currently addressing, focused research questions which in some cases were directed at specific subpopulations of Persian Gulf veterans. As additional research studies are completed and their results enter the scientific literature, a more complete synthesis of results will be feasible.

Comparative Mortality Among US Military Personnel Worldwide During Operations Desert Shield and Desert Storm - Department of Defense

This study examined the disease and non-battle injury (DNBI) mortality experience of all US military personnel during a 1 year period which included the Persian Gulf War. The DNBI death rates among military personnel deployed to the Persian Gulf were not increased when compared to non-deployed personnel There was also no evidence of clusters of unexpected deaths (Writer, 1996)

Mortality Follow-up Study of Persian Gulf Veterans - Department of Veterans Affairs

The cause-specific mortality experience of 695,292 service members deployed to the Persian Gulf during Operations Desert Shield/Desert Storm between August 1990 and April 1991 was compared to 746,038 non-deployed U.S. service members (Kang et al, 1995). Follow-up on these veterans began on May 1, 1991, or the date they left the Persian Gulf area alive, and ended on September 31, 1993 During the defined period there were a total of 1,765 deaths from all causes among deployed veterans while the number expected in a comparable U.S. civilian population was 4,011. The observed deaths *due to all causes* among deployed Persian Gulf veterans was, however, greater than that in a comparable non-deployed military population during that same period. These excess deaths among deployed veterans are primarily attributed to external causes including all accidents and motor vehicle accidents. No excess deaths were observed for suicide and homicide among the Gulf veterans. When deaths due to accidents, suicide, and homicide (external causes) were excluded (leaving only disease-related causes of death), the number of deaths among deployed veterans was 543 while the number expected was 624 based on the mortality rate among the non-deployed veterans. The computed *disease-related* death rates using these data are not different between deployed and non-

deployed veterans. Despite the difference in overall mortality between deployed and non-deployed veterans, the mortality risk from all causes for deployed veterans was still less than half of what was expected from a comparable U.S. population during the same period. The Department of Veterans Affairs plans to conduct further mortality follow-up studies at appropriate time intervals.

Suspected Increase of Birth Defects and Health Problems Among Children Born to Persian Gulf Veterans in Mississippi - Centers for Disease Control and Prevention/State of Mississippi Department of Health

In late 1993 there was a report of an apparent cluster of birth defects and other health problems among children born to veterans of two Mississippi National Guard units that had been deployed to the Persian Gulf during Operations Desert Shield/Desert Storm The Department of Veterans Affairs in Jackson, Mississippi, the Mississippi State Department of Health, and the Centers for Disease Control and Prevention conducted a collaborative investigation to determine whether an excess number of birth defects occurred among children born to this group of veterans Investigators reviewed the medical records of all children conceived by and born to veterans of these two units after deployment to the Persian Gulf The total number of major and minor birth defects was not greater than expected Limitations of statistical power due to the small number of births (54) prevented the drawing of conclusions about the occurrence of specific birth defects. The frequency of premature birth and low birth weight also appeared similar to that in the general population (Penman et al, 1996).

Centers for Disease Control and Prevention (CDC) Investigation of Veterans in Pennsylvania - Centers for Disease Control and Prevention

In November 1994 the Department of Veterans Affairs, Department of Defense, and the Pennsylvania Department of Health requested that the CDC investigate a report of illnesses among members of an Air National Guard Unit. The CDC conducted a three stage investigation to: 1) characterize signs and symptoms among in the veterans of this unit who were being seen at a local VA medical center; 2) determine whether the prevalence of symptoms was higher among members of this unit compared to other deployed and non-deployed units; and 3) characterize illnesses and identify risk factors. At this time, stages 1 and 2 have been completed.

In the first stage 59 symptomatic Persian Gulf veterans from the VA Medical Center in Lebanon, PA, were interviewed and received standard physical exams. Twenty six of the veterans were selected from the VA Persian Gulf Registry, 14 were typical cases identified by the reporting VA physician, and 19 were listed on the VA Persian Gulf Registry but had not been evaluated by the VA medical center. Of the 59 veterans, 30 had been assigned to the index unit. A variety of symptoms were reported, including: fatigue, joint pain, nasal or sinus congestion, diarrhea, joint stiffness, unrefreshing sleep, excessive gas, difficulty remembering, muscle pains, headaches, abdominal pains, general weakness, and impaired concentration

In the second stage, members of the index unit and three comparison units were surveyed to determine the prevalence of selected symptoms identified in stage 1. The three comparison units included deployed and non-deployed veterans. In all units chronic symptom prevalence was significantly greater among deployed than non-deployed veterans. The prevalences of symptoms from five categories: chronic diarrhea, gastrointestinal complaints, difficult remembering or concentrating, "trouble finding words", and fatigue, were all reported more often in the deployed Persian Gulf veterans from the index unit than the deployed veterans from the other units.

Third stage data collection is complete and analysis of the data is underway. (CDC, 1995)

Epidemiological Studies of Morbidity Among Gulf War Veterans: A Search for Etiologic Agents and Risk Factors - Department of Defense, Naval Health Research Center

The Naval Health Research Center has undertaken seven epidemiological investigations of Persian Gulf veterans and their family members. Descriptions of each of these studies can be found in the Appendix B. Three studies have produced preliminary results which were reported at the Annual Meeting of the American Public Health Association Meeting in San Diego, CA in October 1995. A brief summary of these studies and their preliminary findings are given below. The remaining four studies are in various stages of progress as reported in the Appendix B.

Study 1: A Study of Symptoms among 1500 Seabees

This is a cross-sectional study of morbidity (risk factors and symptoms) of Seabees (Navy construction workers) who had been on active duty since September 1990. Seabees studied (n=1498) included service members who were deployed to the Persian Gulf during Operations Desert Shield/Desert Storm, and those who were non-deployed. All volunteers completed a symptom questionnaire, provided blood and urine specimens, had height and weight measured, and performed a hand-grip strength test. A subset of volunteers had measurements of pulmonary function made by spirometric techniques. Preliminary data show that deployed Persian Gulf veterans reported a higher prevalence of symptoms such as fatigue, headache, muscle or joint pain, and report a higher level of various exposures. When compared to the non-deployed group, the deployed veterans also had higher scores on several abnormal psychological variables. There were no observed differences between the two groups in measurements of hand-grip strength and pulmonary function.

Study 2: A Comparative Study of Hospitalizations Among Active-Duty Personnel who Participated in the Gulf War and Similar Personnel who did not

This was a retrospective cohort study in which hospital discharge records from all DOD hospitals were examined for two groups of service members. The first group

consisted of nearly all active-duty personnel who deployed to the Persian Gulf between August 1, 1990 and July 31, 1991 (N=578,492). The second group consisted of a 50% random sample of personnel (N=699,792) who were on active duty as of September 30, 1990 and were not deployed to the Persian Gulf before July 1991. The hospitalization rate of deployed service members was lower when compared with non-deployed service members for the period before the Persian Gulf War. That rate has slowly risen since the Persian Gulf War approaching the hospitalization rate of the non-deployed veterans. This time-dependent phenomenon probably reflects a "healthy soldier" effect.

Study 3: A Comparative Study of Pregnancy Outcomes Among Gulf War Veterans and Other Active-Duty Personnel

The cohorts described in Study 2 were used in this study. Pregnancy outcomes in the spouses of veterans in these cohorts, and in female Persian Gulf veterans in these cohorts were examined based upon DOD hospital records. Pregnancy-related outcomes including spontaneous abortions, stillbirths, and live births were available. Pediatric conditions of liveborn children, including birth defects recognized after delivery were also available. Pregnancy outcomes among spouses of service members were considered separately from female service members. Preliminary results presented at the American Public Health Association Meeting indicated no overall difference in pregnancy outcomes or birth defects between the deployed and non-deployed cohorts. Final results are pending further data analysis which is ongoing

Biomarkers of Susceptibility and Polycyclic Aromatic Hydrocarbon (PAH) Exposure in Urine and Blood Cell DNA from U.S. Army Soldiers exposed to Kuwait Oil Well Fires - National Institutes of Health

In this study urinary metabolites of PAH, PAH-DNA adducts, and genetic polymorphisms were measured in 62 soldiers in June 1991 prior to deployment to Kuwait, eight weeks into their deployment, and after their return to Germany from Kuwait in October 1991 PAH-DNA adduct levels were actually higher in Germany compared to Kuwait. These results are consistent with measurements of surprisingly low ambient PAH levels in Kuwait in the areas where these soldiers were working despite the presence of oil well fires nine miles to the north. They suggest that these soldiers may not have experienced significant exposures to PAHs associated with the incomplete combustion of petroleum while stationed in Kuwait.

Acute Oral Toxicity Study of Pyridostigmine Bromide, Permethrin, and DEET in the Laboratory Rat - Department of Defense

Pyridostigmine bromide (PB) is a cholinesterase inhibitor (ACHE) that was supplied to troops for use as prophylaxis against exposure to nerve agents. PB was distributed to troops in blister packs of 21 tablets of 30 mg each. PB tablets were taken on order when it was believed a gas attack was imminent. The recommended dosage was

one tablet every 8 hours. PB has been in use for decades (at much higher dosages) in the treatment of patients with myasthenia gravis. Short-term side effects are well known -- e.g., nausea, vomiting, diarrhea, abdominal cramps, increased salivation, miosis, headache and dizziness. There have been no documented long-term side effects in humans of this drug.

The simultaneous or sequential administration of neurotropic compounds (for example, PB and the insect repellent DEET) conceivably could interact to produce an additive or synergistic effect. However, previous research has indicated that PB does not persist in the body (Breyer-Pfaff et al, 1985) and, therefore, is unlikely to cause any long-term effects.

In 1995 DOD investigators completed a study of the acute interactions of PB, DEET, and permethrin when administered orally to rats (US Army, 1995; see also Appendix B). The endpoint studied was lethality at extremely high doses. They found synergism of effect when PB was combined with DEET and permethrin (another insect repellent). The relevance of high dose acute oral toxicity studies to the potential for chronic effects from acute low-level exposures is unknown. The IOM panel (IOM, 1995) concluded that PB is a well-studied medication belonging to a class of drugs about which extensive knowledge exists and that PB could interact with other compounds to cause acute and short-term problems, but was unlikely to cause chronic effects. Nonetheless, the IOM panel recommended that the possibility of chronic neurotoxic effects needs to be tested in appropriate animal models (IOM, 1995).

Summary of Current Findings

Findings from some of the early studies just being reported indicate the following:

- Some cohorts of Persian Gulf veterans report an excess of symptoms in comparison with non-deployed veterans of the same era. A connection between symptoms and a specific disease pathology or pathologies has not been identified. Until more epidemiological studies are complete, it is not possible to generalize these results to the entire Persian Gulf veteran population.
- Based on VA and DOD mortality studies to date, there does not appear to be an excess of disease-specific deaths in Persian Gulf veterans when compared to veterans of the same era.
- The Navy study of hospitalizations indicates that, at least among active duty personnel, the rate of hospitalizations of Persian Gulf veterans does not exceed their non-deployed counterparts. This suggests that Persian Gulf veterans are not experiencing an excess of illnesses of a severity that would lead to hospitalization. Caution must be exercised, however, in drawing a more general conclusion because the study does not account for veterans who may have left the military, or Reserve/National Guard personnel.
- One focused study of a small cohort of Persian Gulf veterans and one study of military hospitalizations did not uncover an overall excess of birth defects among their offspring. Although reassuring, caution must be exercised in drawing more general conclusions about birth outcomes. Several ongoing

epidemiologic studies are investigating pregnancy and birth outcomes. Results from these studies will begin to be available in 1996.

- A DOD study of the interaction of PB, DEET, and permethrin in high dose, orally-exposed rats provides evidence in an animal model for synergistic effects of these compounds. This research suggests the need for further exploration of the potential interactive effects of these compounds at doses of greater relevance to humans. Research currently being conducted by DOD and VA will attempt to further address issues of PB and other compounds that could have interacted with it.

Once results from ongoing research becomes available we should have better knowledge of:

- the relationship between symptoms and clinical illness(es);
- risk factors for various illnesses;
- the risk of adverse reproductive outcomes.

EXPECTED MILESTONES IN 1996

Research Accomplishments

- Completion of the Health Assessment of Persian Gulf War Veterans from Iowa
- Completion of Phase I of the National Health Survey of Persian Gulf Veterans
- Completion of Pennsylvania Air National Guard Study
- Completion of 14 other research projects

Other Milestones

- Publication of final report of the IOM panel on *Health Consequences of Service in the Persian Gulf*
- Publication of final report of the *Presidential Advisory Committee on Gulf War Veterans' Illnesses*
- *A Working Plan for Research on Persian Gulf Veterans' Illnesses - Revised*

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VA PROGRAMS FOR PERSIAN GULF VETERANS

January 1996

The Department of Veterans Affairs (VA) offers Persian Gulf veterans special examinations and priority follow-on care, and it operates a toll-free hotline at 800-749-8387 to inform these veterans of the program and their benefits. VA also is compensating veterans under unprecedented regulations addressing undiagnosed conditions. Special research centers and additional medical investigations are searching for answers to aid seriously ill patients whose underlying disease is unexplained. Most Gulf veterans *are* diagnosed and treated; but for some, such symptoms as joint pain or fatigue have been chronic. Some have responded to treatment of symptoms even though their doctors have not yet identified an underlying illness or pathogenic agent.

UNEXPLAINED ILLNESS:

The prevalence of unexplained illnesses among Persian Gulf veterans is uncertain. Data from special VA examinations show that 8,980 veterans had current symptoms and did not receive a diagnosis. This may be an overestimate or underestimate of the problem of "undiagnosed illnesses" as the diagnoses recorded may not explain all the symptoms. Further, VA does not have information on the chronology, severity or current existence of the symptoms. Answers about illness prevalence are expected through research involving representative samples of the Gulf veteran population (see page 3).

PERSIAN GULF "SYNDROME" UNDEFINED:

Several panels of government physicians and private-sector scientific experts have been unable to discern any new illness or unique symptom complex such as that popularly called "Persian Gulf Syndrome." "No single disease or syndrome is apparent, but rather multiple illnesses with overlapping symptoms and causes," wrote an outside panel led by professors from Harvard and Johns Hopkins University that convened for an April 1994 National Institutes of Health (NIH) workshop. VA has neither confirmed nor ruled out the possibility of a singular Gulf syndrome.

RESEARCH AND RISK FACTORS:

With variation in exposures and veterans' concerns ranging from depleted uranium in armaments to possible contamination from Iraqi chemical/biological agents, VA has initiated wide-ranging research projects evaluating illnesses as well as risk factors in the Gulf environment, spending $2.75 million in fiscal year 1995. The activation of three research centers conducting 14 protocols has enabled VA to broaden its activity from largely descriptive evaluations to greater emphasis on hypothesis-driven research.

Statistics

Some 945,000 servicemembers served in the Gulf from August 1990 through the end of 1994, nearly 697,000 of them serving in the first year. About 505,600 have become potentially eligible for VA care as veterans, having either left the military or having become deactivated reservists or Guard members. More than 54,000 veterans have responded to VA's outreach encouraging any Gulf veteran to get a free physical exam under VA's Persian Gulf Program. Not all are ill:

13 percent of the veterans who had the registry health exam had no health complaint (among the first 44,190 computerized records).

25.5 percent of the same group rated their health as poor or very poor, while 73 percent reported their health as all right to very good (the remaining 1.5 percent did not have an opinion).

SPECIAL HEALTH EXAMINATION:

A free, complete physical examination with basic lab studies is offered to every Persian Gulf veteran, whether or not the veteran is ill. A centralized registry of participants, begun in August 1992, is maintained to enable VA to update veterans on research findings or new compensation policies through periodic newsletters. This clinical database also provides information about possible health trends and may suggest areas to be explored in future scientific research. The 54,000 Persian Gulf veterans who have taken advantage of the physical examination program become part of a larger Persian Gulf Registry. As defined by P.L.102-585, this includes 181,000 Gulf veterans (generally including those counted in the special examination program) who have been seen for routine VA hospital or clinic care, or who have filed compensation claims -- or whose survivor registers a claim.

PERSIAN GULF INFORMATION CENTER:

VA offers a toll-free information line at 800-PGW-VETS (800-749-8387) where operators are trained to help veterans with general questions about medical care and other benefits. It also provides recorded messages that enable callers to obtain information 24 hours a day. Information also is being disseminated 24 hours a day through a national computer bulletin board, VA-ONLINE, at 800-US1-VETS (800-871-8387). It also can be reached at telnet: vaonline.va.gov via the Internet.

PRIORITY ACCESS TO FOLLOW-ON CARE:

VA has designated a physician at every VA medical center to coordinate the special examination program and to receive updated educational materials and information as experience is gained nationally. Where an illness possibly related to exposure to an environmental hazard or toxic substance is detected during the examination, followup care is provided on a priority basis. As with the health examination registry, VA requested and received special statutory authority to bypass eligibility rules governing access to the VA health system.

PERSIAN GULF REFERRAL CENTERS:

If the veteran's illness defies diagnosis, the veteran may be referred to one of four Persian Gulf Referral Centers. Created in 1992, the first centers were located at VA medical centers in Washington, D.C.; Houston; and Los Angeles, with an additional center designated at Birmingham, Ala., in June 1995. These centers provide assessment by specialists in such areas as pulmonary and infectious disease, immunology, neuropsychology, and additional expertise as indicated in such areas as toxicology or multiple chemical sensitivity. There have been approximately 287 veterans assessed at the centers; most ultimately are being diagnosed with known/definable conditions.

STANDARDIZED EXAM PROTOCOLS:

VA has expanded its special examination protocol as more experience has been gained about the health of Gulf veterans. The protocol elicits information about symptoms and exposures, calls the clinician's attention to diseases endemic to the Gulf region, and directs baseline laboratory studies including chest X-ray (if one has not been done recently), blood count, urinalysis, and a set of blood chemistry and enzyme analyses that detect the "biochemical fingerprints" of certain diseases. In addition to this core laboratory work for every veteran undergoing the Persian Gulf program exam, physicians order additional tests and specialty consults as they would normally in following a diagnostic trail -- as symptoms dictate. If a diagnosis is not apparent, facilities follow the "comprehensive clinical evaluation protocol" originally developed for VA's referral centers and now used in VA and military medical centers nationwide. The protocol suggests 22 additional baseline tests and additional specialty consultations,

outlining dozens of further diagnostic procedures to be considered, depending on symptoms.

Veterans have reported a wide range of factors observed in the Gulf environment or speculative risks about which they have voiced concerns. Some are the subject of research investigations and none have been ruled out. There appears to be no unifying exposure that would account for all unexplained illnesses. Individual veterans' exposures and experiences range from ships to desert encampments, and differences in military occupational specialty frequently dictate the kinds of elements to which servicemembers are exposed.

Veteran concerns include exposure to the rubble and dust from exploded shells made from depleted uranium (or handling of the shells); the possibility of a yet-unconfirmed Iraqi chemical-biological agent; and a nerve agent pre-treatment drug, pyridostigmine bromide. Many other risk factors also have been raised. In 1991, VA initially began to develop tracking mechanisms that matured into the Persian Gulf Registry as a direct consequence of early concerns about the environmental influence of oil well fires and their smoke and particulate.Interagency Coordination and White House Response

The federal response to the health consequences of Persian Gulf service is being led by the Persian Gulf Veterans Coordinating Board composed of the Departments of VA, Defense and Health and Human Services. Working groups are collaborating in the areas of research, clinical issues and disability compensation. The Board and its subgroups are a valuable vehicle for communication between top managers and scientists, including a staff office for the Board that follows up on critical issues and promotes continuity in agency activities. President Clinton designated VA as the Coordinating Board's lead agency.

In March 1995, President Clinton announced formation of a Presidential Advisory Committee on Gulf War veterans' illnesses to review and make recommendations on: Coordinating Board activities; research, medical examination and treatment programs; federal outreach; and other issues ranging from risk factors to chemical exposure reports. It has been meeting since August 1995 and currently is developing an interim report.Medical Research

Environmental Hazards Research Centers:

Through a vigorous scientific competition, VA developed major focal points for Gulf veteran health studies at three medical centers: Boston; East Orange, N.J.; and Portland, Ore. With 14 protocols among them, the centers are conducting a variety of interdisciplinary projects, including some aimed at developing a case definition for an unexplained illness and clarification of risk factors. Some protocols involve areas of emerging scientific understanding, such as chronic fatigue syndrome or multiple chemical sensitivity, while others are evaluating or comparing factors in immunity, psychiatry, pulmonary response, neuroendocrinology and other body systems, some at the molecular level.

Health Survey and Mortality Study.

VA's Environmental Epidemiology Service is surveying 15,000 randomly selected Gulf veterans and an equal size control group of veterans of the same time period (but who were not deployed) to compare symptoms in veterans and their family members, examining risk factors and providing physical examinations for a representative sample to help validate the self-reported health data. That office also is engaged in a mortality study, analyzing death certificates to determine any patterns of difference in causes of deaths between deceased Gulf veterans and matched controls. Preliminary data have suggested the deployed veterans have a higher rate of post-war deaths due to accidents and traumatic injury as opposed to diseases or illness. Further analysis is continuing, with a report expected to be submitted for publication in a scientific journal later this year. (Independent of the study, VA has learned of 2,900 deaths among deployed veterans, which is lower than expected under general U.S. mortality rates.)

Exposure-Oriented Studies:

Some current VA investigations are examining hypotheses of specific potential risks and comparing study subjects with controls who did not serve in the Gulf to determine differences in health patterns. A Baltimore project is following the health status of individuals who retained tiny embedded fragments of depleted uranium.

A Birmingham, Ala., pilot program offers an extensive battery of neurological tests aimed at detecting dysfunction that would be expected after exposure to certain chemical weapons.

Other Federal and Collaborative Studies:

In its second annual report to Congress in March 1995, VA, on behalf of the Persian Gulf Veterans Coordinating Board participating agencies, detailed about 50 Persian Gulf research initiatives, reviews and clinical investigations, many involving VA. For example, VA investigators are collaborating with the Naval Medical Research Center in San Diego in general epidemiological studies comparing Gulf veterans and control-group veterans (who served elsewhere) to detect differences in symptoms, hospitalizations, and birth outcomes in large cohorts of active duty servicemembers. A detailed research working plan is available online at http://www.dtic.dla.mil/gulflink/varpt via Internet.

Outside Reviews:

With the Department of Defense (DOD), VA has contracted with the National Academy of Sciences (NAS) to review existing scientific and other information on the health consequences of Gulf operations. Congress has authorized VA and DOD to provide up to $500,000 annually to fund the review. In its first report issued in January 1995, a committee of the NAS Institute of Medicine called for systematic scientific research, including large epidemiological studies. Its recommendations urged greater coordination between federal agencies to prevent unnecessary duplication and assure high-priority studies are conducted. It made a number of recommendations for improvements to programs for Gulf veterans.

Another nongovernment expert panel brought together at an NIH technology assessment workshop in April 1994 examined data and heard from both veterans and scientists, concluding that no single or multiple etiology or biological explanation for the reported symptoms could be identified and indicating it is impossible at this time to establish a single case definition for the health problems of Gulf veterans. A copy is available through VA-ONLINE.

VA also has a standing scientific panel that includes both agency and nongovernment experts to evaluate its activities and provide advice in open meetings.VA Disability Compensation

On Feb. 3, 1995, VA published a final regulation on compensation payments to chronically disabled Persian Gulf veterans with undiagnosed illnesses. The undiagnosed illnesses, which must have become manifest either during service in or within two years of leaving the Southwest Asia theater, may fall into 13 categories: fatigue; signs or symptoms involving skin; headache; muscle pain; joint pain; neurologic signs or symptoms; neuropsychological signs or symptoms; signs or symptoms involving the respiratory system (upper or lower); sleep disturbances; gastrointestinal signs or symptoms; cardiovascular signs or symptoms; abnormal weight loss; and menstrual disorders. While these categories represent the signs and symptoms frequently noted in VA's experience to date, other signs and symptoms also could qualify for compensation. A disability is considered chronic if it has existed for at least six months. For claims considered under this special regulation, VA has a 29 percent approval rate among claims where the veteran has demonstrated symptoms within the two-year period allowed by law. Among the remaining 71 percent, most are diagnosable conditions treated under conventional regulations, while some symptoms fail to meet the 6-month chronicity requirement or are found to be related to another known cause.

Outside of the new regulation, VA has long based monthly compensation for veterans on finding evidence a

condition arose during or was aggravated by service. VA has approved 22,387 compensation claims of Gulf veterans for service injuries or illnesses of all kinds, including 976 claims in which the veteran alleged the cause was an environmental hazard, and within that group, 386 claims approved under the new undiagnosed illnesses regulation.

Thurmond

STATEMENT BY SENATOR STROM THURMOND (R-SC) BEFORE A JOINT HEARING BY THE SENATE VETERANS AFFAIRS COMMITTEE AND INTELLIGENCE COMMITTEE REGARDING MILITARY EXPOSURE TO CHEMICAL NERVE AGENTS IN IRAQ; WEDNESDAY, SEPTEMBER 25, 1996; HART 216, 10:30 A.M.

MR. CHAIRMAN:

The exposure of our Armed Forces personnel to chemical nerve agents is a matter of great concern. The well-being of those who served in the Persian Gulf, is an issue that I have vigorously pursued. As chairman of the Armed Services Committee, I have included provisions in Defense authorization bills establishing the Persian Gulf War registry, providing funding for research, and directing a study on low-level exposure to nerve agents. Of course, under the lead of Senator Shelby, the Committee did a study in various nations in the Coalition regarding possible exposure.

In 1994, the Department of Defense sent a summary to Congress to report the findings of the Defense Science Board's review of Iraq's chemical/Biological Warfare use during the Persian Gulf War. That summary reported that the task force found no evidence of overt, intentional use of biological or chemical weapons by the Iraqis. Furthermore, their investigation found no credible source of low levels of exposure to chemical weapons, making such exposure unlikely.

Mr. Chairman, we now know that our troops were exposed to nerve agent released as a result of postwar demolition of chemical rockets at an ammunition storage area in Iraq. The Pentagon acknowledged it has known since November 1991 that nerve weapons were stored in Iraq, but claims it had not realized U.S. troops were involved in the March 1991 depot destruction.

In light of these developments, it is critical that the government continue to identify those who may have been exposed to nerve agents to assess their health, and to continue to provide medical care.

Mr. Chairman, as we discuss these concerns, let us keep in mind that we are dealing with more than words or reports. What is at issue is the treatment of human beings - men and women who served their country. This Committee has previously heard the testimony of numerous Veterans who went to the Gulf in excellent health and returned with various illnesses and disabilities. Included in the list of complaints are swellings, headaches, rashes, pain in the joints, chronic fatigue, neurological disorders, respiratory troubles and flu like symptoms.

I believe both the Department of Veterans Affairs and the Department of Defense are concerned for the well-being of those who

served in the Persian Gulf. The Department of Veterans Affairs has taken action to address the many mysteries surrounding the various ailments, commonly described as "Persian Gulf Syndrome." Such actions include the establishment of the Persian Gulf Registry to provide health exams and health monitoring of Veterans, as well as the institution of various research programs to identify the causes of the unexplained illnesses reported by Persian Gulf Veterans.

I thank the chairman of both committees for holding this important hearing today. I look forward to reviewing the testimony of the witnesses and working with you to make sure our veterans are treated fairly and honorably.

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Opening Statement
of
Senator Alan K. Simpson

Senate Committee on Veterans' Affairs and Senate Select Committee on Intelligence Joint Hearing
on
Chemical Weapons in the Gulf
September 25, 1996

I am pleased to be present today for this hearing to address the recent Pentagon reports that U.S. military personnel may have been exposed to low-levels of chemical nerve agent in March 1991 during post-Persian Gulf War bunker destructions in Iraq. I have been most eager to work with my friend, Senator Arlen Specter, the Chairman of the Senate Select Committee on Intelligence, in crafting this hearing. I know that his concerns for any military personnel who may have been exposed to nerve agents are most sincere. I share that deep concern as does everyone in this Congress and the last 103rd Congress.

It is clear that we need to know more about the Khamisiyah bunker in Southern Iraq that was destroyed back in March 1991. I have read the August 2, 1996 CIA report on the matter as well as statements that have been issued by the DOD. Questions still remain. We need more information and it is my intent to gather it today in the most productive

way possible. Today's proceeding is not in any way an attempt to round-up "The Accused." It is a good faith effort to ground ourselves in the facts so that we might be able to perform our jobs in a thoughtful manner.

It is my hope that by hearings' end, we will have a better understanding, for example, of why the UNSCOM report that was transmitted to the DOD in November 1991 was not given more consideration? Was it because of the "fog of war?" We are soon to find out. Why did chemical detectors not go off when the Khamisiyah bunker was destroyed by the U.S. Army? Importantly, what was learned from this experience? If errors were made, what can be done to ensure it does not happen again? These are but a few of the questions swirling about. Indeed, I welcome the expert testimony of the VA, DOD and CIA. It will be helpful to hear from each of these fine and seasoned witnesses.

I am well aware of the veterans who believe it is the low-level nerve agent exposures from the Khamisiyah bunker destruction that made them ill. Many of them contact me. They speak from their hearts. I hear

them. Nobody wants veterans who have served our nation with pride and distinction to be suffering. Nobody. Nobody doubts that many of them are ill. But we don't know exactly what is making them sick. Researchers have not been able to conclude that the symptoms are the result of any one unique illness. That is why a great research, outreach, treatment and compensation effort was set in motion during the 103rd Congress. We are continuing with this aggressive response under my watch as Chairman of the Senate Veterans Affairs Committee -- and the effort will continue long after I retire from the Senate.

I do want everyone to know of the federal government's vast involvement with our Persian Gulf veterans. Indeed, the VA will speak to that in a few minutes but I do want to enter into the record two documents that list all that we are doing for our sick Persian Gulf veterans. We are a great nation and we have allocated great resources for our sick veterans.

The VA has over 30 research projects underway. It has three Environmental Hazards Research Centers and has announced the creation of a fourth center. The VA is also undertaking a gargantuan

epidemiological survey and study. It will compare a representative sampling of 15,000 deployed Persian Gulf veterans with a control group of 15,000 veterans who served stateside or in other locations away from Southwest Asia during the Persian Gulf War. Results are due in 1998.

Congress also passed legislation requiring that sick Persian Gulf veterans be compensated by the VA -- EVEN IF THERE IS NO DIAGNOSIS OF DISEASE. There are 13 categories of undiagnosed illnesses for which a Persian Gulf veteran can be compensated. Congress also mandated that Persian Gulf veterans receive priority treatment at VA hospitals.

This is just a smattering of the many ongoing federal activities for the Persian Gulf veterans. The other agencies included in the multiagency research effort are the Department of Defense, the National Institutes of Health, the Centers for Disease Control, the National Academy of Science, the Environmental Protection Agency and more.

I will simply say that this Congress, and the 103rd Congress, accomplished a great deal for our nation's Persian Gulf veterans.

Coordinated efforts are underway to treat them, to compensate them and to better understand their ailments. They have been uppermost in our minds and for anyone to say otherwise is plain wrong.

Thank you. I do look forward to today's hearing.

Vice Chairman Kerrey

Senate Select Committee on Intelligence
Opening Statement
Hearing on the Investigation of Gulf War Syndrome
September 25, 1996

Mister Chairman, the Persian Gulf War ended over five years ago. Our gratitude and concern for the brave men and women who fought in that conflict continues. Our nation and the rest of the world owe a great debt to the soldiers who fought to liberate Kuwait. Paying the debt means we should not let America's victory translate into personal tragedy for the soldiers who suffer from unique, unexplained sicknesses caused by their service in Kuwait.

We meet today as part of an ongoing effort to identify and understand the ailments which mysteriously afflict many of our veterans. The fact our government continues this effort so long after the war ended reflects the United States' commitment to finding a diagnosis and a cure.

Our specific concern on the Intelligence Committee is to be sure all appropriate collection and analytical resources have been focused on this problem. Our intelligence collectors and analysts must find and sift all the data available about the chemical and biological environment of the Kuwait battlefield. When new evidence sheds additional light on old reporting, enabling our analysts to piece together more of this puzzle, we should not criticize people who decided not to act on incomplete information. We need to encourage them to continue their work and uncover even more information.

While some may seek to find fault, I see many departments and agencies and thousands of people within the military,

the intelligence community, and medical community working diligently trying to find both the cause and the cure for this problem. I hope their persistent efforts will continue unimpeded and their work will soon pay off.

We will also today be hearing about chemicals such as mustard gas, sarin, and cyclo-sarin. We were fortunate during the Gulf War that these compounds were not used as weapons against our men and women. These horrible weapons should never again be used. Their presence in the Gulf theater in the hands of Saddam Hussein is a strong argument for the United States to continue to lead the international community in the effort to outlaw these weapons of mass destruction by all means, including ratification of the Chemical Weapons Convention as soon as possible.

13 February 199[illegible]

The Honorable Arlen Specter
Chairman
Committee on Veterans' Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

Enclosed are answers to questions Mr. John McLaughlin received from former Committee Chairman Alan Simpson subsequent to the joint SSCI/Veterans Affairs Gulf War Illnesses hearing on 25 September 1996. If you require any further assistance, please do not hesitate to call.

Sincerely,

John H. Moseman
Director of Congressional Affairs

Enclosure

The Honorable Arlen Specter

Question # 1. What were the differences between the United Nations' reports of November 1991 and May 1996 regarding the evidence of chemical rounds at Bunker 73?

A. Iraqi chemical rockets are externally identical to conventional rockets. Prior to the May 1996 inspection, UN reporting implied that the UN believed or assumed the presence of chemicals in Bunker 73, but no sampling was done, and chemical agent monitors did not detect nerve agents. The UN reports of November 1991 relating to Bunker 73 addressed the munitions there but did not record or document - - either in written, photographic, or video form - - information to show if the rounds at Bunker 73 had been chemical. The May 1996 inspection documented interior design features - - such as plastic inserts and burster tubes - - that removed any uncertainty that the rockets in Bunker 73 were chemical rockets.

Question # 2. In light of this recent reexamination of the UNSCOM Report, are documents detailing the numerous false chemical alarms being reexamined as well? If so, by whom?

A. DoD has an ongoing effort to reexamine the circumstances that caused the alarms to go off.

Question #3. Why, in your view, did the DoD determine that there was no relationship between the UNSCOM document and the operations of the 37th Engineering Battalion?

A. We can not speak for the Department of Defense and believe that the question should be directed to appropriate DoD officials.

THE ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301-1200

HEALTH AFFAIRS

MAR 10 1997

Honorable Arlen Specter
Chairman, Committee on Veterans' Affairs
United States Senate
Washington DC 20510

Dear Mr. Chairman:

This is in response to Senator Simpson's letter, written as Chairman of the Committee on Veterans' Affairs, concerning some additional questions subsequent to Dr. Joseph's testimony before the Committee on September 25, 1996. I have enclosed the information you requested, with respect to: the kind of research DoD has carried out on the effects of low-level nerve agent exposure to date (Enclosure 1); when the GIS will be completed and available for use by researchers (Enclosure 2); and whether anything has been published concerning the personal communications with Dr. Fred Sidell cited in the Report on Possible Effects of OP Low-Level Nerve Agent Exposure (Enclosure 3).

I have just recently received the responses requested from the various agencies involved. I regret the delay in our response.

Sincerely,

Stephen C. Joseph, M.D., M.P.H.

Enclosures:
As Stated

cc:
Honorable John D. Rockefeller, IV
Ranking Democrat

Senate Committee on Veterans' Affairs
September 25, 1996

Question 1: *What kind of research has the DoD carried out on the effects of low-level nerve agent exposure to date? Please explain the kinds of low-level exposure research the DoD will undertake with the $3.5 million recently committed to this research?*

Answer: A list of references is included, detailing some of the studies conducted by DoD that are relevant to the clinical effect of nerve agents. Also, in combination with the Departments of Veterans Affairs and Health & Human Services, DoD has implemented an aggressive research program to better understand the symptoms and illnesses experienced by Persian Gulf veterans. Enclosed is a copy of "A Working Plan For Research on Persian Gulf Veterans' Illnesses," dated November 1996, prepared by the Research Working Group of the Persian Gulf Veterans' Coordinating Board. This document contains information concerning the whole research program surrounding Persian Gulf illnesses, including research concerning possible low-level chemical weapons exposure. In FY96, as a result of new information concerning the destruction of Iraqi chemical weapons immediately following the Persian Gulf War, DoD and VA committed $5 million to study the health effects of possible subclinical exposure to chemical warfare agents. Of the $5M, $2.5M was allocated immediately to fund three research proposals. The remainder was allocated to fund scientific proposals to determine the feasibility of epidemiological studies, in human subjects, including those thought to be near Khamisiyah, Iraq, during the first two weeks of March, 1991, and to conduct animal studies, designed to assess the possible long-term or delayed clinical effects of low-level or subclinical exposure to chemical warfare agents. The dead line for these proposals was February 19, 1997. We expect to fund the best proposals, based on scientific merit and military relevance by September 30, 1997. An additional $9.5 million of FY97 funds have been allocated to investigate the causal relationships between illnesses and symptoms among Gulf War veterans and possible exposures to hazardous material; chemical warfare agents; stress; potentially hazardous combinations of inoculations and investigational new drugs during military service in the Southwest Asia theater of operations during the Persian Gulf War. The deadline for proposals is March 11, 1997.

Enclosures:
As Stated

U S ARMY MEDICAL RESEARCH INSTITUTE OF CHEMICAL DEFENSE (USAMRICD)

This list of references of published results are from studies conducted by the DoD which are relevant to the clinical effects of acute or chronic exposure to nerve agents. This list is only a small subset of published results of studies supported by the DoD on the effects of nerve agents, their mechanisms of action, and their response to medical countermeasures

DOSE-RELATED ACUTE AND CHRONIC EFFECTS OF EXPOSURE TO ORGANOPHOSPHORUS CHEMICAL AGENTS

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*** KEY REFERENCES**

Ongoing research on the effects of nerve agent supported by the DoD include the following extramural projects:

Neuroprotection from OP-Induced Seizures and Neuropathology

Cholinesterase Structure: Identification of Residues and Domains Affecting Organophosphate Inhibition and Catalysis

Physiologically Based Modeling of C(±)P(±)-Soman Toxicokinetics

Toxicokinetics of O-ethyl-S-(2-Diisoprophylaminoethyl) Methylphosphonothioate [(+)-VX]-Identification of Metabolic Pathways

Molecular Targets for Organophosphates in the Central Nervous System

Transgenic Engineering of Cholinesterase: Tools for Exploring Cholinergic Responses

Chronic Organophosphorus Exposure and Cognition

Senate Committee on Veterans' Affairs
September 25, 1996

Question 2: The DoD is developing a Geographic Information System (GIS) that will be a comprehensive registry of troop movement and exposures during the Persian Gulf War. When will the GIS be completed and available for use by researchers? Has the DoD developed a protocol concerning who can have access to the GIS?

Answer: The U.S. Army Center for Health Promotion and Preventive Medicine (CHPPM) has developed the Troop Exposure Assessment Model (TEAM) which uses geographic information system (GIS) technology for conducting space and time analyses of Operation Desert Storm troop unit locations / movements and their relation to the Kuwait oil well fires superplumes. The TEAM was established in 1993 in response to Public Laws 102-190 (Oil Fires Exposure Registry) and 102-585 (Veterans' Health Status). The TEAM's databases include the Operation Desert Storm Personnel Registry (supplied by the Defense Manpower Data Center), the Operation Desert Storm Troop Unit Movement database (supplied by the U.S. Army and Joint Services Environmental Support Group), model and satellite derived oil fire superplume boundaries (supplied by the National Oceanic and Atmospheric Administration), and toxicological / exposure factors (supplied by DoD and the U.S. Environmental Protection Agency). The TEAM became operational in June 1996 in support of the above Public Laws. These databases are updated as new information becomes available in terms of additional unit movement data from continued records searches, improved toxicological data from additional research, and other potential environmental exposure data from enhanced study into potential incidents. CHPPM has been assessing and integrating other potential Gulf War environmental exposures (i.e., chemical agents, depleted uranium, pesticides, etc.) and medical outcomes (i.e., DoD's Comprehensive Clinical Evaluation Program) data into the TEAM since July 1996. In addition, the CHPPM has started using the TEAM to analyze potential incidents such as the relation of US Forces to the Khamisiyah munitions demolitions and Fox/M256 detections.

The CHPPM GIS is already being used by researchers from the DoD and other Federal agencies such as the Department of Veterans Affairs (VA), as well as researchers from outside the Federal government working on federally funded investigative efforts on Persian Gulf illnesses (PGI). Additionally, CHPPM works with other DoD agencies, including the Office of the Special Assistant for Gulf War Illnesses, the Defense Intelligence Agency, the Naval Health Research Center and the Defense Manpower Data Center. CHPPM is also collaborating with several federally funded investigators. These groups include, the University of Iowa, the Centers for Disease Control and Prevention, the VA's Boston Environmental Hazards Center, and the Klemm Analysis Group, Inc.

DoD will be coordinating with the Persian Gulf Veterans' Coordinating Board, Research Working Group, to develop and implement a formal procedure regarding researchers' access to TEAM GIS data.

Senate Committee on Veterans' Affairs
September 25, 1996

Question 3: *I had the opportunity to review the "Report on Possible Effects of Organophosphates 'Low-Level' Nerve Agent Exposure" that was prepared by the Persian Gulf Illness' Investigation Team. One of the citations in the literature review is a personal communication from Dr. Fred Sidell -- one of the leading researchers in the field. Has that personal communications been published? I would like to obtain a copy of it. I think it is important for it to become part of the public record so that other researchers might have access to it.*

Answer: The personal communication from Dr. Fred Sidell has not been published. Dr. Sidell stated that the original discussion was a phone conversation referencing symptomatic high-dose nerve agent exposure as compared to low-dose asymptomatic nerve agent exposure. However, concerning the citation in the literature review, information pertaining to health effects of chemical weapons is located on the InterNet and in a textbook which is expected to be published by February 28, 1997. Dr. Sidell quoted three references which address the personal communication:

1. InterNet - www.dtic.mil/gulflink/finalagt.htm
2. InterNet - www.gulfwar.org/index.html
3. The Borden Institute Textbook of Military Medicine, Medical Aspects of Chemical and Biological Warfare, 14 January 1997, editor - Colleen Quick;Telephone (202)782-7572

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